Institutional Productivity

The Undergraduate Origins of Science and Engineering Ph.D.s

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Contractor Report Prepared for the Office of Technology Assessment

July 1987

J952-24

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ACKNOWLEDGMENTS

The author extends special thanks to Edward (Joe) Finan and Maren Herman of the National Research Council staff for their invaluable assistance. They not only supervised the keying of the baccalaureate counts but programmed and generated all tabular and graphic data presented in this report.

Vance Grant, U.S. Department of Education and Lori Thurgood, National Research Council, were also of tremendous assistance in helping the author to locate essential data sources for the study.

000034

TABLE OF CONTENTS

I. INTRODUCTION 1
Purpose of Report 1

II. METHODOLOGY 2
Data Sources 2
Evaluation Criteria 6
Rationale for Selection of Benchmark Graduation Years 7
Field Definition 8
Institutional Selection 8

III. BACCALAUREATE SOURCES OF SCIENCE/ENGINEERING PH.D.S BY PRODUCTIVITY RATIOS 11
Top 100 Institutions 11
Technical Institutions 12
Liberal Arts Colleges 13
Predominately Women's Colleges 13
Traditionally Black Colleges 14

IV. PRODUCTIVITY RATIOS FOR BACCALAUREATE INSTITUTIONS FROM 1950-51 TO 1975-76 28
Top 100 Institutions 28
Technical Institutions 29
Liberal Arts Colleges 29
Women's Colleges 29
Traditionally Black Colleges 30

V. PRODUCTIVITY RATIOS FOR BACCALAUREATE INSTITUTIONS BY FIELD OF PH.D. 46
Top 100 Institutions 46
Technical Institutions 46
Liberal Arts Colleges 47
Women's Colleges 47
Traditionally Black Colleges 48

VI. BACCALAUREATE ORIGIN OF SCIENCE/ENGINEERING PH.D.S WHO ENTER S/E EMPLOYMENT FIELDS AND PURSUE RESEARCH CAREERS 71

VII. DEMOGRAPHIC CHARACTERISTICS OF GRADUATES FROM THE LEADING 50 UNDERGRADUATE SOURCES OF S/E PH.D.S 79
Gender and Field of Ph.D. 79
Race-Ethnic and Field of Ph.D. 83

VIII. SUMMARY 87
Possible Future Studies 89

00v065

Appendices

Appendix A: B.A. to Ph.D. Output Rankings by Baccalaureate Institutions 91

Appendix B: B.A. to Ph.D. Productivity Ratios by Baccalaureate Institutions 114

Appendix C: States by Region 137

Appendix D: Institutional Categories Derived from the 1976 Carnegie Classification System 139

Appendix E: Sampling and Weighting Procedures for the 1985 Survey of Doctorate Recipients 141

000066

List of Tables

Table 1A	Productivity Ratios of the Leading 100 Undergraduate Sources of Science/Engineering Ph.D.s	16
Table 1B	B.A. to Ph.D. Productivity Ratios for Technical Institutions	21
Table 1C	B.A. to Ph.D. Productivity Ratios for Liberal Arts Colleges	22
Table 1D	B.A. to Ph.D. Productivity Ratios for Predominately Women's Colleges	25
Table 1E	B.A. to Ph.D. Productivity Ratios for Traditionally Black Colleges	27
Table 2A	Productivity Ratios for the Leading 100 Undergraduate Sources of Science/Engineering Ph.D.s by 6 Selected Years	31
Table 2B	B.A. to Ph.D. Productivity Ratios for Technical Institutions	37
Table 2C	B.A. to Ph.D. Productivity Ratios for Liberal Arts Colleges	38
Table 2D	B.A. to Ph.D. Productivity Ratios for Predominately Women's Colleges	41
Table 2E	B.A. to Ph.D. Productivity Ratios for Traditionally Black Colleges	43
Table 3A	Field of Ph.D.s for Baccalaureate Graduates of the Leading 100 Undergraduate Sources of Science/Engineering Ph.D.s	49
Table 3B	Field of Ph.D.s for Baccalaureate Graduates of Technical Institutions	54
Table 3C	Field of Ph.D.s for Baccalaureate Graduates of Liberal Arts Colleges	55
Table 3D	Field of Ph.D.s for Baccalaureate Graduates of Predominately Women's Colleges	58
Table 3E	Fields of Ph.D.s for Baccalaureate Graduates of Traditionally Black Colleges	60
Table 4	Top 50 Undergraduate Sources of EMP Ph.D.s	61
Table 5	Top 50 Undergraduate Sources of Life Sciences Ph.D.s	64
Table 6	Top 50 Undergraduate Sources of Social Sciences Ph.D.s	67
Table 7	Percentages of S/E Ph.D.s Who Earned Baccalaureate Degrees from Selected Types of B.A. Institutions and Were Employed in S/E or in Research in 1985	73

000067

Table 8A Ph.D. Institutions Most Frequently Selected by B.A. Graduates from the Top 100 Undergraduate Sources of S/E Ph.D s 74

Table 8B Ph.D. Institutions Most Frequently Selected by B.A. Graduates from Technical Colleges 75

Table 8C Ph.D. Institutions Most Frequently Selected by B.A. Graduates from Liberal Arts Colleges 76

Table 8D Ph.D. Institutions Most Frequently Selected by B.A. Graduates from Predominately Women's Colleges 77

Table 8E Ph.D. Institutions Most Frequently Selected by B.A. Graduates from Traditionally Black Colleges 78

Table 9 Field of Ph.D. and Gender of Baccalaureates from the Top 50 Undergraduate Sources of Science/Engineering Ph.D.s 80

Table 10 Field of Ph.D. and Race/Ethnic Classification of Baccalaureates from the Top 50 Undergraduate Sources of Science/Engineering Ph.D.s 84

List of Figures

Figure 1 Productivity Trends of Top 100 Baccalaureate Institutions 36

Figure 2 Productivity Trends by Type of Baccalaureate Institution 44

Figure 3 Productivity Trends by Selected Baccalaureate Institutions 45

Figure 4 Ph.D.s by Field of Doctorate Types of B.A. Institution 70

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I. INTRODUCTION

Purpose of Report

Previous studies dealing with the baccalaureate origins of Ph.D. recipients have provided evidence indicating that there are, indeed, relationships between undergraduate institutions and B.A. to Ph.D. productivity.

The purpose of this study is to address the question of whether certain types of educational institutions are more effective than others in producing baccalaureates who continue on to earn a science/engineering (S/E) Ph.D., and subsequently enter the S/E work force as well as pursue research careers.

The B.A. to Ph.D. pipeline is analyzed for several points in time, begirning with baccalaureate counts from 1950-51 and ending with the 1975-76 academic year. The corresponding doctoral data include counts from the mid-to-late fifties up to 1986.

The baccalaureate to Ph.D. pipeline is further explored by relating institutional productivity ratio to types of undergraduate institutions (technical institutions, research-oriented liberal arts colleges, predominately women's colleges, and traditionally black institutions); public/private schools; primary field of discipline for doctoral studies (empirical sciences, life sciences, and social sciences); demographic characteristics of the baccalaureate graduates (gender and race/ethnic classification); and Carnegie classification of the graduate schools these baccalaureates select for doctoral studies.

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II. METHODOLOGY

Data Sources

Although the National Center for Statistics (previously referred to as NCES, the National Center for Educational Statistics) of the U.S. Department of Education has gathered information on the number of baccalaureates (combined with first professional degree until 1961) awarded by U.S. institutions of higher education since 1947 to 1948, none of the baccalaureate degree by institution data are available on tape prior to 1968-69.

Because of the need to have counts of the baccalaureates awarded by institutions to calculate institutional productivity of the baccalaureate to Ph.D. pipeline, controlling for size of institution, it was necessary to extract from published NCES documents B.A. counts for all U.S. baccalaureate-granting institutions for each academic year during the 1950s and 1960s.

Baccalaureate production counts were then reviewed for 1950-51 through 1967-68 (the period of time when taped data were not available) to determine which benchmark years would be most representative of the four to five years surrounding it. Starting with 1950-51, the counts for baccalaureates awarded by the 1,282 U.S. institutions of higher education declined steadily from 384,352 to a low of 287,401 for academic year 1954-55. Academic year 1955-56, however, marked the beginning of a steady increase in baccalaureate production (311,298) until 1960-61 when the number of B.A.s awarded (365,337) showed a decline of approximately 30,000 from the previous academic year. The number of B.A.s awarded increased steadily from 1960-61 to 1975-76. Based on these trend data, combined with the magnitude of the task of extracting from published reports data for over 1,200 institutions per year, a decision was made to select data at 5-year intervals, beginning with academic year 1950-51.

000070

Baccalaureate degree data for academic years 1950-51, 1955-56, 1960-61, and 1965-66 (hereafter referred to in tabular data as 1950, 1955, 1960, 1965) were extracted from the NCES's annual publications, Earned Degrees Conferred.[1] Data were reported by gender; therefore, the number of baccalaureate counts for institutions (which increased from the 1,282 schools that reported counts in 1950-51 to over 1,500 schools in 1965-66) for the four selected benchmark years exceeded 10,000 pieces of data that had to be extracted and transferred to coding sheets.

As data from the NCES reports, which were listed by State, were transferred to coding forms, it was necessary to acknowledge schools that had changed names, "closed their doors," or merged with other institutions. This task was further complicated by the inconsistent manner in which schools reported data to NCES. Frequently various campuses or branches of a State university system reported data separately, yet in subsequent years they reported one count for all campuses combined. An example of this was the University of California system where data for the fifties were reported for all campuses combined, but by individual campuses in the sixties. In this situation, the data were reviewed to determine the best way to analyze it. Because individual campus data were available for the University of California system for the 1960s and 1970s, a decision was made to calculate productivity ratios for these individual campuses. Therefore, no productivity calculations are reported for the various campuses of the University of California for the 1950s when individual campus counts were not available.

Where there were great variations in how data were reported from one benchmark year to the next, the data were generally merged with the main campus data and reported as one count. For example, data from the various campuses of Rutgers University, Indiana University, Columbia University, Loyola University (IL), University of Minnesota, University of Missouri, University of Maryland, Long Island University,

1. National Center for Education Statistics, Department of Health, Education, Welfare, Earned Degrees Conferred (Washington, DC: U.S. Government Printing Office, 1950-51, 1955-56, 1960-61, and 1965-66).

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Fairleigh Dickinson (NJ), University of Illinois, Southern Illinois University, University of Michigan, University of Tennessee, University of Arkansas, University of Texas, University of Alabama, and University of Colorado were merged and are reported for the main campuses only.

The task of transferring NCES published counts on baccalaureates awarded to a coding form was greatly facilitated by use of the National Research Council's (NRC) Institutional Code Book.[2] This code book was divided into two major sections. One section included an alphabetic listing of all institutions of higher education, with an assigned NRC institutional code. The second section consisted of a numeric listing of each institution in ascending order within State. All universities/colleges that had merged with another institution, had changed its names, or had ceased to exist were noted in the code book and were crossed-referenced with their former institutions. Without the use of this reference document, the NCES to NRC conversion would have resulted in a number of omissions from the institutional data file.

As data from the NCES reports were transferred to coding forms, it was necessary to match each institution to the National Research Council's institutional code. The NRC code is a 5-digit numerical code, with the first two positions identifying the State in which the institution is located, and the third through fifth digits identifying the specific institution (originally assigned by NRC so that the institutions were in alphabetical order within State). Where there were branches or campuses within a university system, the sixth position, an alpha character, identified the branch or campus.

As indicated earlier, data for the 1969 to 1985 baccalaureates by institution were available on tape. However, in keeping with the research design of this study, only data for academic years 1970-71 and 1975-76 were extracted from the tape. These

2. National Research Council, Office of Scientific and Engineering Personnel, Codes for Educational Institutions and United States Possession (Washington, DC: NRC, September 1986).

00072

institutions were converted from the HEGIS coding system to NRC's institutional coding scheme, so that the baccalaureate data could be matched with NRC's doctoral data.

The baccalaureate data for 1950-51, 1955-56, 1960-61, and 1965-66 were keypunched and transferred to tape, and merged with the 1970-71 and 1975-76 data. A computer printout of the manually produced data and the existing taped data was examined for discrepancies from one benchmark year to the next. Special attention was given to the comparison between 1965-66 data and the 1970-71 data to assure that the manual extractions conformed to the same conditions (mergers, name changes) as the taped data.

Where there were serious reservations about the completeness of the data that were reported, the data were not entered on the final edited tape. For example, an institution that reported well over 300 baccalaureates granted in 1950-51, 1955-56, and 1965-66, reported less than 25 baccalaureates granted in 1960-61. A check on the counts for the degrees conferred by this institution during 1964 and 1967 indicated that the institution was still granting over 300 baccalaureates per year. A decision was made to omit the 1960-61 entries as being unreliable data with the hypothesis that only one department reported B.A. degree data to NCES for academic year 1960-61. Only when data were clearly suspect were these deletions made.

In addition to the NCES data on baccalaureate origins, two other data sources were used in this study: The National Research Council's Doctorate Record File and the Survey of Doctorate Recipients file. The Doctorate Records File (DRF) is based on the annual Surveys of Earned Doctorate (SED). The SED, which was first conducted in 1953, is done in cooperation with the graduate departments of Ph.D.-granting institutions. New Ph.D. recipients complete questionnaires that are designed to provide information on the new doctorate's demographic characteristics, as well as his/her employment plans.

Although the first SED was conducted in 1953, the DRF contains data on virtually all 1920 to 1986 U.S. Ph.D.s. For pre-survey doctorates, basic information on sex, Ph.D.

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field of study, baccalaureate institution, and doctoral institution was compiled by NRC staff through the use of institutions' commencement announcements.

The Survey of Doctorate Recipients (SDR), the other NRC data source for this study, is a biennial survey of an approximately 14 percent sample of Ph.D.s in the sciences, engineering, and humanities. The survey sample is a longitudinal sample, and include information on doctorates from 1930 to 1986.

The SDR was designed to provide employment information about Ph.D.s and to follow their employment patterns over time. Although the SDR dates back to 1973, the active survey sample only includes doctorates for the most recent 42-year time span. For example, the first SDR included a sample of doctorates from 1930 to 1972. The 1985 survey, however, includes doctorates from 1942 to 1984.

The SDR questionnaire consists of questions on the Ph.D.'s field of employment, type of employment, primary work activity, and salary.

Evaluation Criteria

The institutional output rank, given in the following tabular data, is based on the absolute number of baccalaureates from a specified institution that go on to earn Ph.D.s in science/engineering. Obviously, the large degree granting institutions have the highest output rank because of the larger number of graduates that have the potential to earn the doctorates.[3] Therefore, the productivity ratio was introduced as a means of measuring the contributions of baccalaureate-granting institutions to Ph.D. production, while controlling for size of the institution. The productivity ratio for each institution was calculated by dividing the number of baccalaureates from institution "A" that went on to earn a science/engineering Ph.D. from either institution "A" or another doctoral

3. See Appendix A for a listing of United States undergraduate institutions by B.A. to Ph.D. output rankings.

000074

granting institution for a specific referenced B.A. year (or for the total of the six referenced B.A. years) by the total number of baccalaureates awarded by institution "A" for the same referenced year(s).[4]

The baccalaureate year was used as a reference point, rather than the Ph.D. year. For example, the number of baccalaureates who graduated from Massachusetts Institute of Technology (MIT) in 1955-56 and continued graduate studies to earn a S/E Ph.D. (irrespective of where and when said Ph.D. was earned) was divided by the total number of baccalaureate degrees awarded by MIT in 1955-56.

The productivity ratio controls for the size of the undergraduate institutions, therefore, it differs considerable from the output ratio. For instance, Harvey Mudd College, a small liberal arts college in California, ranked 207 when the number of its graduates who went on to earn S/E Ph.D.s were compared to other baccalaureate granting institutions, yet its productivity ratio, which was based on the percentage of its graduates who obtained S/E Ph.D.s, placed it second overall in rank.

Rationale for Selection of Benchmark Graduation Years

In view of the fact that earned degree information by institution was not published by NCES until 1947-48 and was not available on tape until 1969, a decision was made to extract data for 5-year intervals, beginning with baccalaureate production during the academic year 1950-51.

The 1975-76 academic year was the last year selected for baccalaureate data because of the assumption that it takes anywhere from 5 to 10 years to obtain a science/engineering Ph.D. after the baccalaureate has been earned. Those individuals who earned a baccalaureate degree in 1975-76 and then went on to pursue a doctoral

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4. See Appendix B for a listing of United States undergraduate institutions by B.A. to Ph.D. productivity ratios.

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degree in S/E were likely to have earned their Ph.D. prior to 1986, the last year in which doctoral data were available from NRC's Doctoral Records File. Baccalaureate reference points beyond 1975 would have been unreliable because a high percentage of graduates who pursued doctoral studies would still be in the Ph.D. pipeline.

Field Definition

The Ph.D. field groupings (Empirical Sciences, Life Sciences, and Social Sciences) used in the following tables are those that are typically used by the National Academy of Sciences' staff in presenting doctoral data.

- Empirical Science (EMP) includes engineering, mathematics and computer sciences, and physical sciences (such as astronomy, atmospheric and meterological sciences, chemistry, geological sciences, and physics).
- Life Sciences include agricultural sciences, biological sciences, and health science.
- Social Sciences include psychology, economics and econometrics, anthropology and sociology, political sciences and international relations, and other social sciences.

Institutional Selection

To address the question of whether certain types of educational institutions are more effective than others in producing baccalaureates who continue on to earn S/E Ph.D.s, the following groups of institutions were earmarked for special analysis:

- Technical Institutions

The 15 leading technical institutions identified by Fuller in her 1985 study[5] (in

5. C.H. Fuller, "An Analysis of Leading Undergraduate Sources of Ph.D.s, Adjusted for Institutional Size" (Ann Arbor, MI: Great Lakes College Associate, June 1985).

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which she calculated institutional productivity on the basis of the average number of baccalaureates awarded during 1946 to 1976 and the average number of Ph.D.s earned during 1951 to 1980 for all accredited institutions) were earmarked for special analysis. The curriculum of these institutions, which were mostly male in student body make-up, focused heavily on the empirical sciences.

The question of whether the productivity of these technically-oriented schools is greater than other less science-focused schools is addressed in the report as is the question of the likelihood that graduates from these institutions are more likely than graduates from other types of baccalaureate institutions to remain in S/E and enter the S/E research work force after they have earned their Ph.D.s.

- Liberal Arts Colleges

The 50 colleges that participated in the Second National Conference on "The Future of Science at Liberal Arts Colleges" at Oberlin College, Oberlin, Ohio in June 1986 were identified as the special group that make up the liberal arts colleges for this report. However, because Columbia University failed to report separate baccalaureate counts for Bernard College (a part of the Columbia University system) to NCES, it was not possible to calculate productivity ratios for Bernard College, one of the liberal arts colleges represented at the Oberlin conference. Thus, the "Oberlin 50" became the "Oberlin 49" for this report.

These liberal arts colleges were of special interest because an earlier study by Knapp and Goodrich pointed out that among the 50 most productive institutions of higher education, "the vast majority were small liberal arts colleges."[6] This finding was later confirmed by Tidball and Kistiakowsky who noted that "small, private liberal arts colleges were especially productive, in percentage terms, of men who later earned doctorates."[7]

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6. R.H. Knapp and H.B. Goodrich, "The Origin of American Scientists," Science vol. 133, May 1951, pp. 543-545.
(continued)

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- Traditionally Women's Colleges

Using the data from the NCES reports, those institutions that had zero counts for baccalaureates awarded to men in the 1950s and 1960s were labeled "women's colleges." Over 120 colleges were so labeled, however, because the number of women who earned baccalaureates from the majority of these colleges and then proceeded on to earn a S/E Ph.D. was small, the productivity ratios were too small to report. Only 58 women's colleges were analyzed by computer, and of these only 34 had productivity ratios of 1 percent or greater.

It should be noted that many institutions that were single sex colleges in the early 1950s and 1960s have either merged with other colleges/universities or have started admitting sizeable numbers of students of the opposite sex in the 1970s.

Given the frequently held view that women tend to gravitate to the humanities or social sciences rather than the "hard" sciences, special analysis of the women's colleges was done to determine their productivity ratios, and compare them to technical institutions which are predominately male and science-focused in their curriculum.

- Traditionally Black Institutions

As part of a report by Hill,[8] traditionally black colleges were listed, along with the number of baccalaureate degrees awarded by each college in 1982. Institutions with greater than 100 baccalaureates awarded and over 70 percent black enrollment were isolated for special analysis. Fifty-three black institutions were identified; however, only 20 institutions are reported because of the low productivity ratios for the remaining institutions.

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7. M.E. Tidball and V. Kistiakowsky, "Baccalaureate Origins of American Scientists and Scholars," Science vol 193, August 1976, pp. 646-652.
8. Susan Hill, "The Traditionally Black Institutions of Higher Education," 1860-1982, 84-308X (Washington, DC: U.S. Department of Education).

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iII. BACCALAUREATE SOURCES OF SCIENCE/ENGINEERING PH.D.S BY PRODUCTIVITY RATIOS

Top 100 Institutions

Table 1A lists the leading 100 undergraduate sources of science/engineering Ph.D.s for the six selected benchmark years for all science/engineering fields combined. As the reader might suspect, the undergraduate institutions with the highest output ranks (based on absolute numbers of B.A. tc Ph.D. production) are not, for the most part, the institutions with the highest productivity ratios (B.A. to Ph.D. production, adjusted for size of institution).

Of the leading 100 baccalaureate institutions, 81 were private schools and only 19 were public. Only three women's colleges (Radcliffe (MA), Bryn Mawr (PA), Wellesley (MA)), and none of the traditionally black colleges were in the top 100. Fourteen of the 15 technical institutions that had been earmarked for special analysis were in the top 100, and 31 of the 49 private liberal arts research colleges had productivity ratios large enough to place them in the highly productive top 100 institutions.

By geographic location,[9] the Middle Atlantic region (New York, New Jersey, and Pennsylvania) accounted for one-third of the top 100 institutions, followed by the Pacific region (Washington, Oregon, California, Alaska, and Hawaii), New England region (Maine, New Hampshire, Vermont, Massachusetts, Rhode Island, and Connecticut), and East North Central region (Ohio, Indiana, Illinois, Michigan, and Wisconsin) where 16, per region, of the leading institutions were located. The remaining 5 geographic regions of the United States accounted for less than 20 percent of these highly productive undergraduate institutions.

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9. See Appendix C for a listing of States in each of the nine regions.

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Technical Institutions

Of the 15 technical institutions that were identified for special analysis, 14 had productivity ratios that placed them in the top 100 undergraduate institutions in the United States. However, two institutions stood out as being particularly productive: California Institute of Technology and Massachusetts Institute of Technology (Table 1B).

Of the 875, mostly male, baccalaureates that graduated from the California Institute of Technology during the six benchmark years, 388 (or 44 percent) continued on to earn Ph.D.s in science/engineering prior to 1986.

Massachusetts Institute of Technology, which ranked number 2 in absolute B.A. to Ph.D. output during the 1950 to 1986 time period, also ranked number 2 among the technical institutions in productivity with 1,114 of its 5,234 baccalaureate graduates (or approximately one out of every five) earning S/E Ph.D.s.

With the exception of Case Western Reserve (OH) (a consolidation of Western Reserve University and Case Institute of Technology) and Carnegie-Mellon University (PA), these top ranked technical institutions were primarily private male colleges. There were, however, tremendous variations in the size of these technical schools. Massachusetts Institute of Technology and California Institute of Technology were both relatively large producers of baccalaureates that went on to earn Ph.D.s, ranking in the top 50 of U.S. colleges. However, Webb Institute of Naval Architecture (NY), which had a productivity ratio high enough to place it in number 7 ranking among the technical institutions, was one of the smallest B.A. to Ph.D. producers (in absolute numbers) ranking number 782 in output.

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Liberal Arts Colleges

Although there were similarities in size and nature of undergraduate programs for the liberal arts colleges listed in table 1C, there were large variations in the degree to which these schools produced baccalaureates that went on to earn S/E Ph.D.s.

The B.A. to Ph.D. output rankings ranged from a 50 for Oberlin College (OH) to 548 for Hampton College (VA). The productivity ratio, on the other hand, ranged from 30.6 percent for Harvey Mudd College (CA) to one percent for Hampton College (VA). Thirty-one of the 49 colleges were listed in the top 100 baccalaureate sources of S/E Ph.D.s. As many as 37 of these colleges were located in the New England, Middle Atlantic, and East North Central regions.

Three of the liberal arts colleges, namely Harvey Mudd, Reed, and Swarthmore, had significantly high productivity ratios. Approximately one out of every three baccalaureates awarded by Harvey Mudd College continued on to earn a S/E Ph.D. For Reed College (OR), the ratio was one out of every five graduate earned S/E Ph.D. degree and for Swarthmore, the ratio was one out of every six graduates.

Predominately Women's Colleges

Although 127 baccalaureate producing women's colleges were rostered for special analysis, only 34 are reported in table 1D. The reason for this truncated list is the small productivity ratio that were calculated for women's colleges. Only the colleges that had productivity ratios of one percent or greater are reported.

Only the top three women's colleges (namely Radcliffe, Bryn Mawr, and Wellesley) were in the top 100 leading baccalaureate sources of science/engineering Ph.D.s. Radcliffe and Bryn Mawr, in particular, had significantly higher production ratios than the other women's colleges in the group.

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However, the reader should note that the 13 percent productivity ratio for Radcliffe was based on baccalaureate data for 1950-51, 1955-56, and 1960-61, but on Ph.D. data reported for all six referenced years. This resulted from the fact that Radcliffe merged with Harvard and its counts on baccalaureates awarded during academic years 1965-66, 1970-71, and 1975-76 were no longer reported to NCES as Radcliffe counts, but rather as Harvard counts. The difficulty in the productivity calculations stemmed from the fact that women who earned their baccalaureate degrees from the Radcliffe branch of Harvard continued to report on the DRF survey form that they had earned their baccalaureates from Radcliffe, rather than Harvard.

If the data were to be adjusted to only reflect the three referenced years, Radcliffe's productivity ratio would decrease to approximately 6 percent which would drop it from number 1 rank on the list of women's colleges to number 2, and from rank number 8 on the top 100 institutions to number 51.

Thirty of the top B.A. to Ph.D. producing women's colleges were located on the east coast with 11 in the New England region, 13 in the Middle Atlantic region, and 6 in the South Atlantic region.

With the one exception of Mary Washington College (VA), the top producing women's colleges were private schools, and for the majority (28) of these colleges, the number of baccalaureates that went on to earn S/E Ph.D.s was less than 30 for all six referenced years combined.

Traditionally Black Colleges

From the 53 traditionally black colleges that were selected for analysis, only 20 colleges are presented in table 1E, because of the low productivity ratios calculated for the balance of these schools.

Black colleges, in general, had very small numbers of their graduates who went on

000052

to pursue S/E Ph.D.s. The total number of S/E Ph.D.s traced to these baccalaureate institutions for the combined six referenced years was well below 30 Ph.D.s with the exception of Howard University (DC) (79 Ph.D.s) and Tuskegee University (AL) (43 Ph.D.s).

None of the black colleges were in the top 100 undergraduate sources of S/E Ph.D.s. Only 2 percent each of the baccalaureates from the top ranked black college (Morehouse (GA), Lincoln University (PA), Fisk University (TN), and Tuskegee) went on to earn S/E Ph.D.s. All but two of these black colleges were located in the South (11 in the South Atlantic region; 4 in the East South Central region; and 3 in the West South Central region).

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TABLE 1A

PRODUCTIVITY RATIOS FOR THE LEADING 100 UNDERGRADUATE SOURCES OF SCIENCE/ENGINEERING PHDS (ADJUSTED FOR INSTITUTION SIZE)

PRODUCTIVITY RANK	BA TO PHD OUTPUT RANK	INSTITUTION	TOTAL # S/E PHDS*	PRODUCTIVITY RATIO*	TYPE
1	32	CAL INST TECHNOLOGY	388	44.3	PRIVATE
2	207	HARVEY MUDD COLL/CA	68	30.6	PRIVATE
3	2	MASS INST TECHNOLOGY	1114	21.3	PRIVATE
4	104	REED COLLEGE/OR	172	20.7	PRIVATE
5	78	SWARTHMORE COLL/PA	228	17.1	PRIVATE
6	146	COOPER UNION/NY	126	13.7	PRIVATE
7	23	CHICAGO, UNIV OF/IL	497	13.5	PRIVATE
8	154	RADCLIFFE C/MA	97	13.4	PRIVATE
9	51	RICE UNIVERSITY/TX	288	12.0	PRIVATE
10	179	HAVERFORD COLL/PA	86	11.7	PRIVATE
11	453	NEW COLL-SOUTH FLA U	30	11.6	PRIVATE
12	111	CARLETON COLLEGE/MN	161	11.0	PRIVATE
13	108	POMONA COLLEGE/CA	161	10.2	PRIVATE
14	159	GRINNELL COLLEGE/IA	119	9.9	PRIVATE
15	50	OBERLIN COLLEGE/OH	292	9.7	PRIVATE
16	112	CALIF, U-SAN DIEGO	127	9.4	PUBLIC
16	131	ANTIOCH COLLEGE/OH	156	9.4	PRIVATE
18	5	CORNELL UNIV/NY	981	9.3	PRIVATE
19	389	N MEX I MINING&TECH	33	9.2	PUBLIC
20	28	PRINCETON UNIV/NJ	410	9.0	PRIVATE

*NOTE: TOTAL NUMBERS OF S/E PHDS AND PRODUCTIVITY RATIOS ARE BASED ON DATA FROM 1950-51,1955-56,1960-61,1965-66,1970-71, AND 1975-76.

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TABLE 1A

PRODUCTIVITY RATIOS FOR THE LEADING 100 UNDERGRADUATE SOURCES OF SCIENCE/ENGINEERING PHDS (ADJUSTED FOR INSTITUTION SIZE)

PRODUCTIVITY RANK	BA TO PHD OUTPUT RANK	INSTITUTION	TOTAL # S/E PHDS*	PRODUCTIVITY RATIO*	TYPE
21	140	WESLEYAN UNIV/CT	133	8.9	PRIVATE
21	222	WABASH COLLEGE/IN	73	8.9	PRIVATE
23	127	AMHERST COLLEGE/MA	143	8.6	PRIVATE
24	208	EARLHAM COLLEGE/IN	72	8.5	PRIVATE
25	578	HAMPSHIRE COLL/MA	20	8.4	PRIVATE
26	1	CALIF, U-BERKELEY	1472	8.3	PUBLIC
27	27	RENSSELAER POLY I/NY	368	8.2	PRIVATE
28	92	POLYTECHNIC UNIV/NY	210	8.1	PRIVATE
29	212	BRYN MAWR COLL/PA	75	7.9	PRIVATE
29	89	CALIF,U-RIVERSIDE	189	7.9	PUBLIC
29	56	JOHNS HOPKINS U/MD	276	7.9	PRIVATE
29	106	BRANDEIS UNIV/MA	148	7.9	PRIVATE
33	10	HARVARD UNIV/MA	730	7.5	PRIVATE
34	628	ST JOHNS COLLEGE/MD	18	7.2	PRIVATE
34	138	FRNKLN&MARSHAL C/PA	134	7.2	PRIVATE
36	148	WOOSTER, COLL OF/OH	119	7.0	PRIVATE
36	202	KALAMAZOO COLLEGE/MI	65	7.0	PRIVATE
38	24	YALE UNIVERSITY/CT	470	6.9	PRIVATE
39	49	CARNEGIE-MELLON U/PA	277	6.8	PRIVATE
40	158	CALIF,U-SANTA CRUZ	110	6.7	PUBLIC

*NOTE: TOTAL NUMBERS OF S/E PHDS AND PRODUCTIVITY RATIOS ARE BASED ON DATA FROM 1950-51,1955-56,1960-61,1965-66,1970-71, AND 1975-76.

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TABLE 1A

PRODUCTIVITY RATIOS FOR THE LEADING 100 UNDERGRADUATE SOURCES OF SCIENCE/ENGINEERING PHDS (ADJUSTED FOR INSTITUTION SIZE)

PRODUCTIVITY RANK	BA TO PHD OUTPUT RANK	INSTITUTION	TOTAL # S/E PHDS*	PRODUCTIVITY RATIO*	TYPE
41	144	WILLIAMS COLLEGE/MA	113	6.5	PRIVATE
41	38	BROWN UNIVERSITY/RI	321	6.5	PRIVATE
41	43	ROCHESTER,UNIV OF/NY	320	6.5	PRIVATE
44	782	WEBB I NAVAL ARCH/NY	6	6.4	PRIVATE
44	293	PHILA C PHARM&SCI/PA	52	6.4	PRIVATE
46	75	SUNY AT STONY BROOK	191	6.3	PUBLIC
46	19	STANFORD UNIV/CA	560	6.3	PRIVATE
46	185	WORCESTER POLY I/MA	93	6.3	PRIVATE
49	33	CASE WESTRN RSRVE/OH	399	6.2	PRIVATE
49	205	BOWDOIN COLLEGE/ME	77	6.2	PRIVATE
51	218	KNOX COLLEGE/IL	75	6.0	PRIVATE
52	200	STEVENS INST TECH/NJ	80	5.8	PRIVATE
52	220	DAVIDSON COLLEGE/NC	74	5.8	PRIVATE
54	8	CALIF,U-LOS ANGELES	848	5.7	PUBLIC
54	130	UNION UNIVERSITY/NY	144	5.7	PRIVATE
54	431	ECKERD COLLEGE/FL	24	5.7	PRIVATE
54	35	CALIF, U-DAVIS	337	5.7	PUBLIC
58	7	CUNY-CITY COLLEGE	915	5.6	PUBLIC
58	532	BLACKBURN COLLEGE/IL	21	5.6	PRIVATE
60	245	LAWRENCE UNIV/WI	69	5.5	PRIVATE

*NOTE: TOTAL NUMBERS OF S/E PHDS AND PRODUCTIVITY RATIOS ARE BASED ON DATA FROM 1950-51,1955-56,1960-61,1965-66,1970-71, AND 1975-76.

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TABLE 1A

PRODUCTIVITY RATIOS FOR THE LEADING 100 UNDERGRADUATE SOURCES OF SCIENCE/ENGINEERING PHDS (ADJUSTED FOR INSTITUTION SIZE)

PRODUCTIVITY RANK	BA TO PHD OUTPUT RANK	INSTITUTION	TOTAL # S/E PHDS*	PRODUCTIVITY RATIO*	TYPE
61	67	DARTMOUTH COLLEGE/NH	235	5.4	PRIVATE
61	261	BATES COLLEGE/ME	62	5.4	PRIVATE
61	14	COLUMBIA UNIV/NY	646	5.4	PRIVATE
61	438	DELAWARE VALLEY C/PA	34	5.4	PRIVATE
65	178	CLARK UNIVERSITY/MA	92	5.3	PRIVATE
65	216	BELOIT COLLEGE/WI	72	5.3	PRIVATE
65	375	ILL BENEDICTINE COLL	25	5.3	PRIVATE
68	156	OCCIDENTAL COLL/CA	106	5.2	PRIVATE
68	621	KING COLLEGE/TN	15	5.2	PRIVATE
68	275	JUNIATA COLLEGE/PA	54	5.2	PRIVATE
68	129	SUNY AT BINGHAMTON	131	5.2	PUBLIC
72	164	LAFAYETTE COLLEGE/PA	117	5.1	PRIVATE
72	95	ILLINOIS INST TECH	187	5.1	PRIVATE
72	244	MUHLENBERG COLL/PA	77	5.1	PRIVATE
75	282	WHITMAN COLLEGE/WA	52	5.0	PRIVATE
76	150	WELLESLEY COLLEGE/MA	118	4.9	PRIVATE
76	147	CALIF,U-IRVINE	102	4.9	PUBLIC
78	82	LEHIGH UNIVERSITY/PA	190	4.8	PRIVATE
78	190	US MILITARY ACADEMY	99	4.8	PUBLIC
78	271	SUNY ENVR SCI FRSTRY	52	4.8	PUBLIC

*NOTE: TOTAL NUMBERS OF S/E PHDS AND PRODUCTIVITY RATIOS ARE BASED ON DATA FROM 1950-51,1955-56,1960-61,1965-66,1970-71, AND 1975-76.

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TABLE 1A

PRODUCTIVITY RATIOS FOR THE LEADING 100 UNDERGRADUATE SOURCES OF SCIENCE/ENGINEERING PHDS (ADJUSTED FOR INSTITUTION SIZE)

PRODUCTIVITY RANK	BA TO PHD OUTPUT RANK	INSTITUTION	TOTAL # S/E PHDS*	PRODUCTIVITY RATIO*	TYPE
81	310	RHODES COLLEGE/TN	41	4.7	PRIVATE
81	677	US MERCHANT MAR ACAD	18	4.7	PUBLIC
83	281	KENYON COLLEGE/OH	40	4.6	PRIVATE
83	497	BARD COLLEGE/NY	20	4.6	PRIVATE
83	252	HAMILTON COLLEGE/NY	60	4.6	PRIVATE
83	473	CENTRE COLL KENTUCKY	29	4.6	PRIVATE
83	57	DUKE UNIVERSITY/NC	282	4.6	PRIVATE
88	333	LEBANON VALLEY C/PA	45	4.5	PRIVATE
88	240	COLORADO SCH MINES	55	4.5	PUBLIC
88	206	HOPE COLLEGE/MI	74	4.5	PRIVATE
91	280	DREW UNIVERSITY/NJ	51	4.4	PRIVATE
92	266	BEREA COLLEGE/KY	61	4.3	PRIVATE
92	483	CHARLESTON, C OF/SC	26	4.3	PUBLIC
92	711	PITZER COLLEGE/CA	12	4.3	PRIVATE
92	300	S DAKOTA S MINE&TECH	45	4.3	PUBLIC
92	191	VASSAR COLLEGE/NY	92	4.3	PRIVATE
92	21	IOWA STATE UNIV	520	4.3	PUBLIC
98	204	YESHIVA UNIV/NY	65	4.2	PRIVATE
98	136	BUCKNELL UNIV/PA	130	4.2	PRIVATE
98	229	MACALESTER COLL/MN	72	4.2	PRIVATE

*NOTE: TOTAL NUMBERS OF S/E PHDS AND PRODUCTIVITY RATIOS ARE BASED ON DATA FROM 1950-51, 1955-56, 1960-61, 1965-66, 1970-71, AND 1975-76.

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TABLE 1B

BA TO PHD PRODUCTIVITY RATIOS FOR TECHNICAL INSTITUTIONS

PRODUCTIVITY RANK	BA TO PHD OUTPUT RANK	INSTITUTION	TOTAL # S/E PHDS*	PRODUCTIVITY RATIO*	TYPE
1	32	CAL INST TECHNOLOGY	388	44.3	PRIVATE
2	2	MASS INST TECHNOLOGY	1114	21.3	PRIVATE
3	389	N MEX I MINING&TECH	33	9.2	PUBLIC
4	27	RENSSELAER POLY I/NY	368	8.2	PRIVATE
5	92	POLYTECHNIC UNIV/NY	210	8.1	PRIVATE
6	49	CARNEGIE-MELLON U/PA	277	6.8	PRIVATE
7	762	WEBB I NAVAL ARCH/NY	6	6.4	PRIVATE
8	185	WORCESTER POLY I/MA	93	6.3	PRIVATE
9	33	CASE WESTRN RSRVE/OH	399	6.2	PRIVATE
10	200	STEVENS INST TECH/NJ	80	5.8	PRIVATE
11	95	ILLINOIS INST TECH	187	5.1	PRIVATE
12	82	LEHIGH UNIVERSITY/PA	190	4.8	PRIVATE
13	240	COLORADO SCH MINES	55	4.5	PUBLIC
14	300	S DAKOTA S MINE&TECH	45	4.3	PUBLIC
15	369	ROSE-HULMAN TECH/IN	27	3.5	PRIVATE

*NOTE: TOTAL NUMBERS OF S/E PHDS AND PRODUCTIVITY RATIOS ARE BASED ON DATA FROM 1950-51,1955-56,1960-61,1965-66,1970-71, AND 1975-76.

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TABLE 1C

BA TO PHD PRODUCTIVITY RATIOS FOR LIBERAL ARTS COLLEGES

PRODUCTIVITY RANK	BA TO PHD OUTPUT RANK	INSTITUTION	TOTAL # S/E PHDS*	PRODUCTIVITY RATIO*	TYPE
1	207	HARVEY MUDD COLL/CA	68	30.6	PRIVATE
2	104	REED COLLEGE/OR	172	20.7	PRIVATE
3	78	SWARTHMORE COLL/PA	228	17.1	PRIVATE
4	179	HAVERFORD COLL/PA	86	11.7	PRIVATE
5	111	CARLETON COLLEGE/MN	161	11.0	PRIVATE
6	108	POMONA COLLEGE/CA	151	10.2	PRIVATE
7	159	GRINNELL COLLEGE/IA	119	9.9	PRIVATE
8	50	OBERLIN COLLEGE/OH	292	9.7	PRIVATE
9	131	ANTIOCH COLLEGE/OH	156	9.4	PRIVATE
10	140	WESLEYAN UNIV/CT	133	8.9	PRIVATE
10	222	WABASH COLLEGE/IN	73	8.9	PRIVATE
12	127	AMHERST COLLEGE/MA	143	8.6	PRIVATE
13	208	EARLHAM COLLEGE/IN	72	8.5	PRIVATE
14	212	BRYN MAWR COLL/PA	75	7.9	PRIVATE
15	138	FRNKLN&MARSHAL C/PA	134	7.2	PRIVATE
16	148	WOOSTER, COLL OF/OH	119	7.0	PRIVATE
16	202	KALAMAZOO COLLEGE/MI	65	7.0	PRIVATE
18	144	WILLIAMS COLLEGE/MA	113	6.5	PRIVATE
19	205	BOWDOIN COLLEGE/ME	77	6.2	PRIVATE
20	220	DAVIDSON COLLEGE/NC	74	5.8	PRIVATE

*NOTE: TOTAL NUMBERS OF S/E PHDS AND PRODUCTIVITY RATIOS ARE BASED ON DATA FROM 1950-51,1955-56,1960-61,1965-66,1970-71, AND 1975-76.

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TABLE 1C

BA TO PHD PRODUCTIVITY RATIOS FOR LIBERAL ARTS COLLEGES

PRODUCTIVITY RANK	BA TO PHD OUTPUT RANK	INSTITUTION	TOTAL # S/E PHDS*	PRODUCTIVITY RATIO*	TYPE
21	130	UNION UNIVERSITY/NY	144	5.7	PRIVATE
22	261	BATES COLLEGE/ME	62	5.4	PRIVATE
23	216	BELOIT COLLEGE/WI	72	5.3	PRIVATE
24	156	OCCIDENTAL COLL/CA	106	5.2	PRIVATE
25	164	LAFAYETTE COLLEGE/PA	117	5.1	PRIVATE
26	282	WHITMAN COLLEGE/WA	52	5.0	PRIVATE
27	150	WELLESLEY COLLEGE/MA	118	4.9	PRIVATE
28	281	KENYON COLLEGE/OH	40	4.6	PRIVATE
28	252	HAMILTON COLLEGE/NY	60	4.6	PRIVATE
30	206	HOPE COLLEGE/MI	74	4.5	PRIVATE
31	191	VASSAR COLLEGE/NY	92	4.3	PRIVATE
32	136	BUCKNELL UNIV/PA	130	4.2	PRIVATE
32	229	MACALESTER COLL/MN	72	4.2	PRIVATE
34	195	COLGATE U/NY	87	4.1	PRIVATE
35	227	TRINITY COLLEGE/CT	62	4.0	PRIVATE
35	162	DEPAUW UNIVERSITY/IN	103	4.0	PRIVATE
37	224	MIDDLEBURY COLL/VT	75	3.9	PRIVATE
37	118	MANHATTAN COLLEGE/NY	160	3.9	PRIVATE
37	183	MT HOLYOKE COLL/MA	82	3.9	PRIVATE
40	238	COLORADO COLLEGE	61	3.8	PRIVATE

*NOTE: TOTAL NUMBERS OF S/E PHDS AND PRODUCTIVITY RATIOS ARE BASED ON DATA FROM 1950-51, 1955-56, 1960-61, 1965-66, 1970-71, AND 1975-76.

000031

TABLE 1C

BA TO PHD PRODUCTIVITY RATIOS FOR LIBERAL ARTS COLLEGES

PRODUCTIVITY RANK	BA TO PHD OUTPUT RANK	INSTITUTION	TOTAL # S/E PHDS*	PRODUCTIVITY RATIO*	TYPE
40	170	ST OLAF COLLEGE/MN	94	3.8	PRIVATE
42	192	WHEATON COLLEGE/IL	94	3.7	PRIVATE
43	215	DENISON UNIV/OH	70	3.6	PRIVATE
44	284	ALBION COLLEGE/MI	53	3.1	PRIVATE
44	168	SMITH COLLEGE/MA	94	3.1	PRIVATE
46	201	OHIO WESLEYAN UNIV	86	3.0	PRIVATE
47	198	HOLY CROSS, C OF/MA	74	2.7	PRIVATE
48	450	ALMA COLLEGE/MI	22	2.2	PRIVATE
49	548	HAMPTON UNIV/VA	20	1.0	PRIVATE

*NOTE. TOTAL NUMBERS OF S/E PHDS AND PRODUCTIVITY RATIOS ARE BASED ON DATA FROM 1950-51,1955-56,1960-61,1965-66,1970-71, AND 1975-76.

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TABLE 1D

BA TO PHD PRODUCTIVITY RATIOS FOR PREDOMINATLEY WOMEN'S COLLEGES

PRODUCTIVITY RANK	BA TO PHD OUTPUT RANK	INSTITUTION	TOTAL # S/E PHDS*	PRODUCTIVITY RATIO*	TYPE
1	154	RADCLIFFE C/MA	97	13.4	PRIVATE
2	212	BRYN MAWR COLL/PA	75	7.9	PRIVATE
3	150	WELLESLEY COLLEGE/MA	118	4.9	PRIVATE
4	183	MT HOLYOKE COLL/MA	82	3.9	PRIVATE
5	466	SARAH LAWRENCE C/NY	26	3.5	PRIVATE
6	168	SMITH COLLEGE/MA	94	3.1	PRIVATE
7	381	GOUCHER COLLEGE/MD	28	2.6	PRIVATE
8	770	NOTRE DAME COLL/OH	11	2.4	PRIVATE
8	600	MILLS COLLEGE/CA	20	2.4	PRIVATE
10	384	CONNECTICUT COLLEGE	33	2.2	PRIVATE
10	725	WELLS COLLEGE/NY	12	2.2	PRIVATE
12	624	CHATHAM COLLEGE/PA	13	2.1	PRIVATE
13	683	WILSON COLLEGE/PA	11	1.8	PRIVATE
13	581	WHEATON COLLEGE/MA	20	1.8	PRIVATE
13	729	ALBERTUS MAGNUS C/CT	8	1.8	PRIVATE
13	552	TRINITY COLLEGE/DC	16	1.8	PRIVATE
13	769	ST JOSEPHS COLL/NY	13	1.8	PRIVATE
18	756	ROSEMONT COLLEGE/PA	11	1.7	PRIVATE
19	675	BENNINGTON COLL/VT	7	1.6	PRIVATE
19	597	AGNES SCOTT COLL/GA	12	1.6	PRIVATE

*NOTE: TOTAL NUMBERS OF S/E PHDS AND PRODUCTIVITY RATIOS ARE BASED ON DATA FROM 1950-51,1955-56,1960-61,1965-66,1970-71, AND 1975-76.

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TABLE 1D

BA TO PHD PRODUCTIVITY RATIOS FOR PREDOMINATLEY WOMEN'S COLLEGES

PRODUCTIVITY RANK	BA TO PHD OUTPUT RANK	INSTITUTION	TOTAL # S/E PHDS*	PRODUCTIVITY RATIO*	TYPE
21	480	SKIDMORE COLLEGE/NY	25	1.5	PRIVATE
21	704	SETON HILL COLL/PA	12	1.5	PRIVATE
21	403	SIMMONS COLLEGE/MA	29	1.5	PRIVATE
24	775	HOOD COLLEGE/MD	10	1.4	PRIVATE
24	530	EMMANUEL COLLEGE/MA	21	1.4	PRIVATE
24	582	MANHATTANVILLE C/NY	15	1.4	PRIVATE
27	643	MT ST VINCENT,COL/NY	14	1.3	PRIVATE
27	567	RANDOLPH-MACN WOM/VA	11	1.3	PRIVATE
29	819	OUR LADY LAKE UN/TX	11	1.2	PRIVATE
29	676	REGIS COLLEGE/MA	13	1.2	PRIVATE
29	730	ELMIRA COLLEGE/NY	13	1.2	PRIVATE
32	678	CHESTNUT HILL C/PA	11	1.1	PRIVATE
33	573	MARY WASHINGTON C/VA	16	1.0	PUBLIC
33	778	INCARNATE WORD C/TX	11	1.0	PRIVATE

*NOTE: TOTAL NUMBERS OF S/E PHDS AND PRODUCTIVITY RATIOS ARE BASED ON DATA FROM 1950-51,1955-56,1960-61,1965-66,1970-71, AND 1975-76.

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TABLE 1E

BA TO PHD PRODUCTIVITY RATIOS FOR TRADITIONALLY BLACK COLLEGES

PRODUCTIVITY RANK	BA TO PHD OUTPUT RANK	INSTITUTION	TOTAL # S/E PHDS*	PRODUCTIVITY RATIO*	TYPE
1	434	MOREHOUSE COLL/GA	18	2.2	PRIVATE
2	658	LINCOLN UNIV/PA	15	2.1	PUBLIC
3	534	FISK UNIVERSITY/TN	20	2.0	PRIVATE
3	398	TUSKEGEE UNIV/AL	43	2.0	PRIVATE
5	693	TOUGALOO COLLEGE/MS	12	1.8	PRIVATE
6	194	HOWARD UNIVERSITY/DC	79	1.7	PRIVATE
7	810	DILLARD UNIV/LA	10	1.1	PRIVATE
8	585	NC CENTRAL UNIV	22	1.0	PUBLIC
8	548	HAMPTON UNIV/VA	20	1.0	PRIVATE
8	463	MORGAN STATE UNIV/MD	23	1.0	PUBLIC
8	836	TALLADEGA COLLEGE/AL	4	1.0	PRIVATE
12	808	SPELMAN COLLEGE/GA	7	.9	PRIVATE
12	760	CLARK COLLEGE/GA	7	.9	PRIVATE
12	504	NC AG & TECH ST U	22	.9	PUBLIC
15	449	SOUTHERN UNIV/LA	27	.8	PUBLIC
16	674	VIRGINIA STATE UNIV	15	.7	PUBLIC
17	688	CENTRAL STATE U/OH	9	.6	PUBLIC
17	843	VIRGINIA UNION UNIV	6	.6	PRIVATE
17	726	XAVIER UNIV/LA	7	.6	PRIVATE
20	818	FT VALLEY ST COLL/GA	7	.5	PUBLIC

*NOTE: TOTAL NUMBERS OF S/E PHDS AND PRODUCTIVITY RATIOS ARE BASED ON DATA FROM 1950-51,1955-56,1960-61,1965-66,1970-71, AND 1975-76.

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IV. PRODUCTIVITY RATIOS FOR BACCALAUREATE INSTITUTIONS FROM 1950-51 TO 1975-76

The productivity ratio for each institution is a measure of the school's success in producing baccalaureates who go on to successfully earn S/E doctorates. Obviously, the productivity ratio is influenced by a number of external variables, as well as changes in the institution itself.

Top 100 Institutions

Table 2A provide information on the productivity ratios of the top 100 undergraduate sources of science/engineering Ph.D.s over time. Although there are variations from one institution to the next, there are overall trends, as shown in figure 1, that indicate the health of the B.A. to Ph.D. pipeline from 1950 to 1975.

From 1950 to 1955, approximately 75 percent of the institutions either increased in their productivity or remained fairly stable. A more definitive trend was noted for the 1955 to 1960 and 1960 to 1965 time periods when as many as 89 percent and 79 percent of these institutions increased or remained stable in their productivity ratios, with the latter time frame consisting of far greater numbers of institutions that merely stabilized in their productivity.

The most noteworthy change occurred from 1965 to 1970 when 89 percent of the top 100 institutions had a decrease in their productivity ratios. Although the situation improved for the 1970 to 1975 time frame, 72 percent of the institutions continued to show a decrease in productivity.

The 1955-56 academic year proved to be banner years for New Mexico Institute of Mining and Technology and Kalamazoo College (MI). New Mexico Institute of Mining and Technology had a productivity ratio of three percent in 1950 but increased to 20 percent

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in 1955. Kalamazoo College increased from 5 percent in 1950 to 17 percent in 1955.

The academic year, 1960-61, proved to be very productive for Webb Institute of Naval Architecture (NY), however, the reader is cautioned here because of the small numbers on which this productivity ratio is calculated.

Technical Institutions

The time series data for technical colleges (table 2B) show that productivity ratios, in general, increased between 1950 and 1965, but decreased sharply and steadily from 1965 to 1975. The most drastic decline occurred for California Institute of Technology which decreased from a productivity ratio of 61 percent in 1965 to 43 percent in 1970 and 1975.

Liberal Arts Colleges

The early 1960s also appeared to be peak years for the liberal arts colleges with a rather drastic decline occurring from 1965 to 1975, especially for the high productive colleges such as Reed College, Swarthmore College, and Antioch College (OH) (table 2C).

Women's Colleges

For the most part, the productivity ratios of predominately women's undergraduate schools was less than three percent for the six benchmark years (table 2D). Higher productivity ratios were noted, however, for Bryn Mawr, Radcliffe, Wellesley, Mt. Holyoke, Sarah Lawrence College, and Smith College.

Productivity in women's colleges increased during the 1950 to 1965 period, but decreased between 1965 and 1975 specially for Bryn Mawr College (PA), Notre Dame

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College (OH), and Trinity College (DC).

Traditionally Black Colleges

The time-series data for the traditionally black institutions indicated that the productivity ratios for these undergraduate sources of S/E Ph.D.s were on the increase between 1955 and 1960, but declined steadily from 1960 to the 1975-76 academic year. (See table 2E).

Figure 2 provides a graphic illustration of the trends that occurred in productivity from 1950 to 1975 for the various types of baccalaureate institutions discussed in the preceding text, and figure 3 shows the productivity ratios over time for selected baccalaureate institutions.

000098

TABLE 2A

PRODUCTIVITY RATIOS FOR THE LEADING 100 UNDERGRADUATE SCURCES OF SCIENCE/ENGINEERING PHDS BY 6 SELECTED YEARS

INSTITUTION	TOTAL PRODUCTIVITY RATIO	1950 %	1955 %	1960 %	1965 %	1970 %	1975 %
CAL INST TECHNOLOGY	44.3	29.6	35.2	57.4	60.7	42.6	43.2
HARVEY MUDD COLL/CA	30.6				37.0	47.5	26.0
MASS INST TECHNOLOGY	21.3	13.9	15.7	32.3	32.6	19.1	16.8
REED COLLEGE/OR	20.7	16.4	16.9	36.4	32.9	14.9	14.4
SWARTHMORE COLL/PA	17.1	18.3	14.0	26.2	22.9	15.1	9.5
COOPER UNION/NY	13.7	14.5	13.8	37.6	15.5	6.1	8.7
CHICAGO, UNIV OF/IL	13.5	20.1	6.6	9.6	21.5	13.7	13.2
RADCLIFFE C/MA	13.4	4.8	4.2	8.9			
RICE UNIVERSITY/TX	12.0	8.7	6.2	15.5	18.3	16.3	7.1
HAVERFORD COLL/PA	11.7	8.9	10.5	9.5	17.8	12.4	11.8
NEW COLL-SOUTH FLA U	11.6					5.3	14.2
CARLETON COLLEGE/MN	11.0	7.8	5.7	15.4	14.1	10.3	10.1
POMONA COLLEGE/CA	10.2	7.4	6.8	14.2	11.9	11.5	8.8
GRINNELL COLLEGE/IA	9.9	6.8	8.8	8.6	15.3	14.8	6.2
OBERLIN COLLEGE/OH	9.7	8.7	11.1	10.4	14.3	11.5	4.2
CALIF, U-SAN DIEGO	9.4					14.9	7.5
ANTIOCH COLLEGE/OH	9.4	10.3	17.6	10.6	18.9	7.0	3.9
CORNELL UNIV/NY	9.3	6.8	6.3	9.8	12.9	7.7	12.7
N MEX I MINING&TECH	9.2	3.4	20.0	10.8	17.9	7.9	7.6
PRINCETON UNIV/NJ	9.0	6.7	8.6	9.5	14.1	6.4	8.8

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TABLE 2A

PRODUCTIVITY RATIOS FOR THE LEADING 100 UNDERGRADUATE SOURCES OF SCIENCE/ENGINEERING PHDS BY 6 SELECTED YEARS

INSTITUTION	TOTAL PRODUCTIVITY RATIO	1950 %	1955 %	1960 %	1965 %	1970 %	1975 %
WESLEYAN UNIV/CT	8.9	11.0	8.9	15.9	8.4	7.9	5.7
WABASH COLLEGE/IN	8.9	13.4	10.2	11.5	11.8	5.1	4.4
AMHERST COLLEGE/MA	8.6	5.3	7.7	10.8	13.9	8.8	5.7
EARLHAM COLLEGE/IN	8.5	5.9	4.5	7.7	11.8		4.0
HAMPSHIRE COLL/MA	8.4						8.4
CALIF, U-BERKELEY	8.3			8.0	8.5	5.6	3.6
RENSSELAER POLY I/NY	8.2	3.7	6.7	12.0	14.9	7.4	8.2
POLYTECHNIC UNIV/NY	8.1	3.9	6.2	9.5	17.3	7.9	6.2
BRYN MAWR COLL/PA	7.9	13.6	5.4	7.1	9.6	9.2	5.0
CALIF,U-RIVERSIDE	7.9			17.6	11.2	7.5	4.9
JOHNS HOPKINS U/MD	7.9	5.3	6.2	10.7	10.8	8.5	6.1
BRANDEIS UNIV/MA	7.9		4.1	8.4	11.2	9.2	6.0
HARVARD UNIV/MA	7.5	6.8	2.6	12.8	12.6	8.0	7.3
ST JOHNS COLLEGE/MD	7.2	15.6	10.0	6.5	10.6	6.1	7.4
FRNKLN&MARSHAL C/PA	7.2	5.7	6.4	11.2	10.6	6.8	4.3
WOOSTER, COLL OF/OH	7.0	6.7	4.1	10.3	10.9	7.5	3.8
KALAMAZOO COLLEGE/MI	7.0	5.3	16.7	10.3	5.9	5.0	7.1
YALE UNIVERSITY/CT	6.9	6.0	4.3	9.4	8.3	7.7	7.2
CARNEGIE-MELLON U/PA	6.8	4.0	3.8	10.0	11.3	6.9	5.4
CALIF,U-SANTA CRUZ	6.7					7.5	6.3

000100

TABLE 2A

PRODUCTIVITY RATIOS FOR THE LEADING 100 UNDERGRADUATE SOURCES OF SCIENCE/ENGINEERING PHDS BY 6 SELECTED YEARS

INSTITUTION	TOTAL PRODUCTIVITY RATIO	1950 %	1955 %	1960 %	1965 %	1970 %	1975 %
WILLIAMS COLLEGE/MA	6.5	5.1	5.1	6.7	9.0	7.5	5.5
BROWN UNIVERSITY/RI	6.5	3.9	2.8	6.5	8.8	9.8	6.5
ROCHESTER,UNIV OF/NY	6.5	5.0	7.2	5.3	9.4	6.2	6.1
WEBB I NAVAL ARCH/NY	6.4	5.3	10.0	40.0			
PHILA C PHARM&SCI/PA	6.4	4.1	3.4	70.6	11.6	5.3	1.9
SUNY AT STONY BROOK	6.3				10.7	7.2	5.1
STANFORD UNIV/CA	6.3	4.9	3.4	6.8	9.7	6.8	6.3
WORCESTER POLY I/MA	6.3	5.2	2.4	6.1	13.1	5.6	4.4
CASE WESTRN RSRVE/OH	6.2	3.3	3.0	9.6	12.1	8.5	4.8
BOWDOIN COLLEGE/ME	6.2	2.9	6.2	12.1	7.9	7.1	3.4
KNOX COLLEGE/IL	6.0	5.8	5.7	6.4	12.1	4.9	2.2
STEVENS INST TECH/NJ	5.8	1.0	5.0	6.5	8.3	8.7	6.3
DAVIDSON COLLEGE/NC	5.8	2.2	2.9	9.1	8.7	6.4	4.2
CALIF,U-LOS ANGELES	5.7			5.6	5.5	4.1	2.9
UNION UNIVERSITY/NY	5.7	6.5	4.3	5.1	9.6	4.3	5.0
ECKERD COLLEGE/FL	5.7				3.8	6.0	6.6
CALIF, U-DAVIS	5.7			11.4	7.1	5.9	3.7
CUNY-CITY COLLEGE	5.6	5.7	5.9	8.4	6.8	4.5	1.9
BLACKBURN COLLEGE/IL	5.6	15.8	7.4	12.0	7.2	2.6	2.2
LAWRENCE UNIV/WI	5.5	3.9	3.6	5.6	8.5	8.0	2.4

00v101

TABLE 2A

PRODUCTIVITY RATIOS FOR THE LEADING 100 UNDERGRADUATE SOURCES OF SCIENCE/ENGINEERING PHDS BY 6 SELECTED YEARS

INSTITUTION	TOTAL PRODUCTIVITY RATIO	1950 %	1955 %	1960 %	1965 %	1970 %	1975 %
DARTMOUTH COLLEGE/NH	5.4	4.6	2.8	9.2	7.2	6.0	3.2
BATES COLLEGE/ME	5.4	2.4	6.8	6.4	5.8	5.4	5.4
COLUMBIA UNIV/NY	5.4	4.3	3.2	7.6	8.8	6.1	4.0
DELAWARE VALLEY C/PA	5.4	2.1		10.7	9.8	3.6	4.7
CLARK UNIVERSITY/MA	5.3	3.7	4.3	8.5	8.0	5.1	4.0
BELOIT COLLEGE/WI	5.3	4.7	4.4	6.0	10.4	4.3	3.1
ILL BENEDICTINE COLL	5.3	9.1	10.7		8.8	4.9	3.2
OCCIDENTAL COLL/CA	5.2	4.2	3.6	6.1	7.6	6.6	2.8
KING COLLEGE/TN	5.2	8.1	4.9	18.2	5.9		2.0
JUNIATA COLLEGE/PA	5.2	6.2	3.4	8.9	7.6	3.7	3.7
SUNY AT BINGHAMTON	5.2		1.5	11.9	11.5	4.5	3.3
LAFAYETTE COLLEGE/PA	5.1	5.3	4.0	6.3	7.8	4.0	3.4
ILLINOIS INST TECH	5.1	3.1	4.1	7.3	8.4	6.0	3.8
MUHLENBERG COLL/PA	5.1	3.9	6.3	4.2	8.5	3.7	4.8
WHITMAN COLLEGE/WA	5.0	4.0	1.9	4.5	12.0	3.5	2.8
WELLESLEY COLLEGE/MA	4.9	1.4	3.3	3.6	7.5	6.6	6.7
CALIF,U-IRVINE	4.9					6.7	4.2
LEHIGH UNIVERSITY/PA	4.8	4.2	4.2	7.3	7.5	3.8	2.8
US MILITARY ACADEMY	4.8	4.0				1.7	.7
SUNY ENVR SCI FRSTRY	4.8	3.3	2.1	11.3	4.2	5.5	4.6

000102

TABLE 2A

PRODUCTIVITY RATIOS FOR THE LEADING 100 UNDERGRADUATE SOURCES OF SCIENCE/ENGINEERING PHDS BY 6 SELECTED YEARS

INSTITUTION	TOTAL PRODUCTIVITY RATIO	1950 %	1955 %	1960 %	1965 %	1970 %	1975 %
RHODES COLLEGE/TN	4.7	3.7	5.4	9.7	6.2	4.1	1.5
US MERCHANT MAR ACAD	4.7					1.6	1.0
KENYON COLLEGE/OH	4.6	2.2	6.9	6.7	8.8	3.8	2.7
BARD COLLEGE/NY	4.6		7.3	10.4	7.0	5.6	2.0
HAMILTON COLLEGE/NY	4.6	2.0	4.6	5.6	9.4	7.7	2.6
CENTRE COLL KENTUCKY	4.6	2.8	6.2	1.4	6.1	3.9	6.1
DUKE UNIVERSITY/NC	4.6	2.2	2.3	3.9	7.1	7.0	4.8
LEBANON VALLEY C/PA	4.5	3.8	4.8	2.7	8.5	4.4	3.3
COLORADO SCH MINES	4.5	2.6	3.4	7.2	7.0	4.9	2.7
HOPE COLLEGE/MI	4.5	7.2	3.1	8.1	7.4	2.0	2.2
DREW UNIVERSITY/NJ	4.4	4.0	5.5	3.6	7.2	3.7	3.4
BEREA COLLEGE/KY	4.3	4.2	6.7	6.1	6.8	1.9	.8
CHARLESTON, C OF/SC	4.3	5.8		9.8	9.1	3.6	2.7
PITZER COLLEGE/CA	4.3					5.9	3.1
S DAKOTA S MINE&TECH	4.3	4.9	5.5	5.6	5.9	3.3	2.6
VASSAR COLLEGE/NY	4.3	3.0	1.8	3.6	3.8	7.1	5.3
IOWA STATE UNIV	4.3	5.2	3.9	7.8	7.1	3.0	2.0
YESHIVA UNIV/NY	4.2	10.2	5.8	4.7	4.7	2.5	2.0
BUCKNELL UNIV/PA	4.2	1.9	1.5	3.2	7.7	4.7	5.0
MACALESTER COLL/MN	4.2	2.2	2.1	2.2	6.3	7.6	3.7

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FIGURE 1

PRODUCTIVITY TRENDS OF TOP 100 BACCALAUREATE INSTITUTIONS

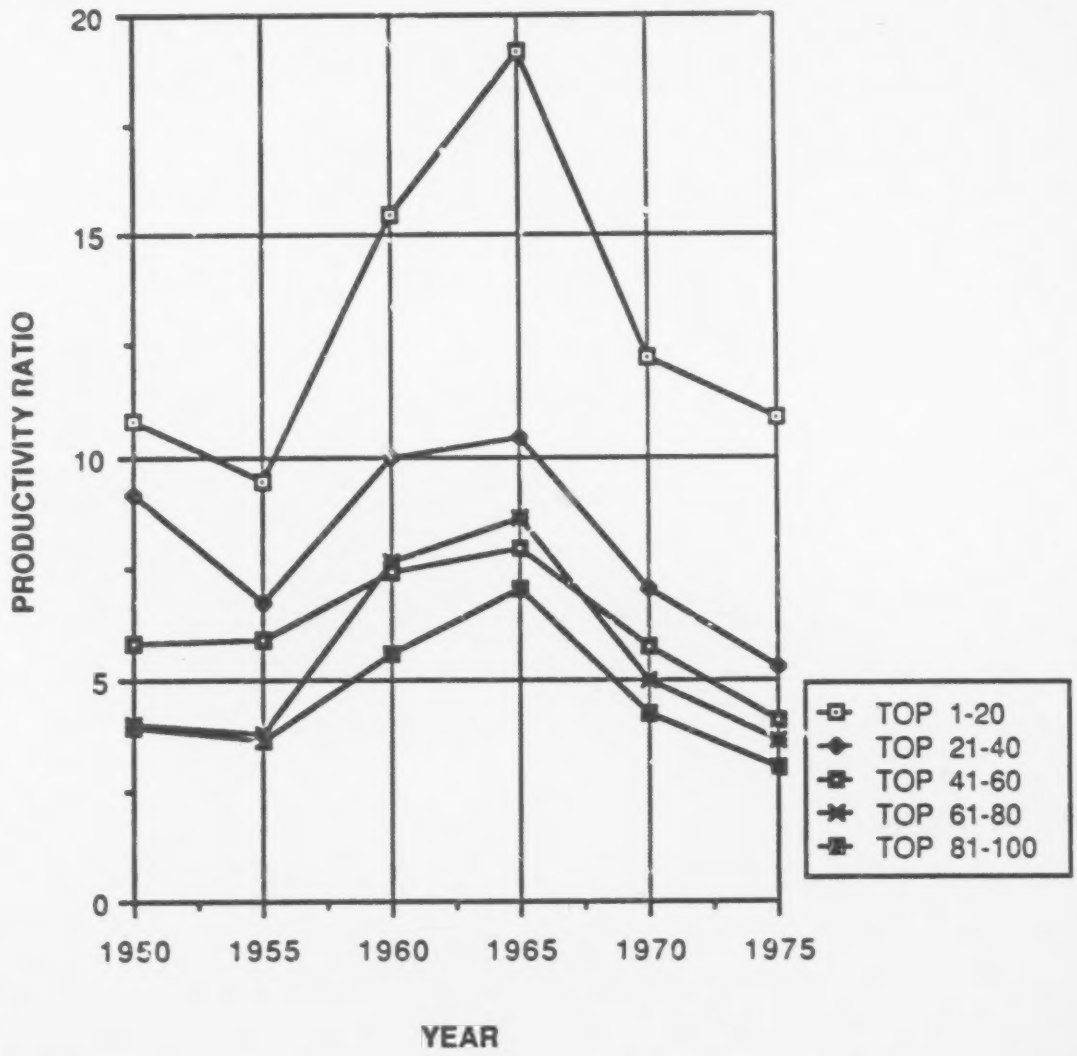

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TABLE 2B

BA TO PHD PRODUCTIVITY RATIOS FOR TECHNICAL INSTITUTIONS

INSTITUTION	TOTAL PRODUCTIVITY RATIO	1950 %	1955 %	1960 %	1965 %	1970 %	1975 %
CAL INST TECHNOLOGY	44.3	29.6	35.7	57.4	60.7	42.6	43.2
MASS INST TECHNOLOGY	21.3	13.9	15.7	32.3	32.6	19.1	16.8
N MEX I MINING&TECH	9.2	3.4	20.0	10.8	17.9	7.9	7.6
RENSSELAER POLY I/NY	8.2	3.7	6.7	12.0	14.9	7.4	8.2
POLYTECHNIC UNIV/NY	8.1	3.9	6.2	9.5	17.3	7.9	6.2
CARNEGIE-MELLON U/PA	6.8	4.0	3.8	10.0	11.3	6.9	5.4
WEBB I NAVAL ARCH/NY	6.4	5.3	10.0	40.0			
WORCESTER POLY I/MA	6.3	5.2	2.4	6.1	13.1	5.6	4.4
CASE WESTRN RSRVE/OH	6.2	3.3	3.0	9.6	12.1	8.5	4.8
STEVENS INST TECH/NJ	5.8	1.0	5.0	6.5	8.3	8.7	6.3
ILLINOIS INST TECH	5.1	3.1	4.1	7.3	8.4	6.0	3.8
LEHIGH UNIVERSITY/PA	4.8	4.2	4.2	7.3	7.5	3.8	2.8
COLORADO SCH MINES	4.5	2.6	3.4	7.2	7.0	4.9	2.7
S DAKOTA S MINE&TECH	4.3	4.9	5.5	5.6	5.9	3.3	2.6
ROSE-HULMAN TECH/IN	3.5	6.3	4.1	6.6	3.1	3.6	1.7

000105

TABLE 2C

BA TO PHD PRODUCTIVITY RATIOS FOR LIBERAL ARTS COLLEGES

INSTITUTION	TOTAL PRODUCTIVITY RATIO	1950 %	1955 %	1960 %	1965 %	1970 %	1975 %
HARVEY MUDD COLL/CA	30.6				37.0	47.5	26.0
REED COLLEGE/OR	20.7	16.4	16.9	36.4	32.9	14.9	14.4
SWARTHMORE COLL/PA	17.1	18.3	14.0	26.2	22.9	15.1	9.5
HAVERFORD COLL/PA	11.7	8.9	10.5	9.5	17.8	12.4	11.8
CARLETON COLLEGE/MN	11.0	7.8	5.7	15.4	14.1	10.3	10.1
POMONA COLLEGE/CA	10.2	7.4	6.8	14.2	11.9	11.5	8.8
GRINNELL COLLEGE/IA	9.9	6.8	8.8	8.6	15.3	14.8	6.2
OBERLIN COLLEGE/OH	9.7	8.7	11.1	10.4	14.3	11.5	4.2
ANTIOCH COLLEGE/OH	9.4	10.3	17.6	10.6	19.9	7.0	3.9
WESLEYAN UNIV/CT	8.9	11.0	8.9	15.9	8.4	7.9	5.7
WABASH COLLEGE/IN	8.9	13.4	10.2	11.5	11.8	5.1	4.4
AMHERST COLLEGE/MA	8.6	5.3	7.7	10.8	13.9	8.8	5.7
EARLHAM COLLEGE/IN	8.5	5.9	4.5	7.7	11.8		4.0
BRYN MAWR COLL/PA	7.9	13.6	5.4	7.1	9.6	9.2	5.0
FRNKLN&MARSHAL C/PA	7.2	5.7	6.4	11.2	10.6	6.8	4.3
WOOSTER, COLL OF/OH	7.0	6.7	4.1	10.3	10.9	7.5	3.8
KALAMAZOO COLLEGE/MI	7.0	5.3	16.7	10.3	5.9	5.0	7.1
WILLIAMS COLLEGE/MA	6.5	5.1	5.1	6.7	9.0	7.5	5.5
BOWDOIN COLLEGE/ME	6.2	2.9	6.2	12.1	7.9	7.1	3.4
DAVIDSON COLLEGE/NC	5.8	2.2	2.9	9.1	8.7	6.4	4.2

000106

TABLE 2C

BA TO PHD PRODUCTIVITY RATIOS FOR LIBERAL ARTS COLLEGES

INSTITUTION	TOTAL PRODUCTIVITY RATIO	1950	1955	1960	1965	1970	1975
		%	%	%	%	%	%
UNION UNIVERSITY/NY	5.7	6.5	4.3	5.1	9.6	4.3	5.0
BATES COLLEGE/ME	5.4	2.4	6.8	6.4	5.8	5.4	5.4
BELOIT COLLEGE/WI	5.3	4.7	4.4	6.0	10.4	4.3	3.1
OCCIDENTAL COLL/CA	5.2	4.2	3.6	6.1	7.6	6.6	2.8
LAFAYETTE COLLEGE/PA	5.1	5.3	4.0	6.3	7.8	4.0	3.4
WHITMAN COLLEGE/WA	5.0	4.0	1.9	4.5	12.0	3.5	2.8
WELLESLEY COLLEGE/MA	4.9	1.4	3.3	3.6	7.5	6.6	6.7
KENYON COLLEGE/OH	4.6	2.2	6.9	6.7	8.8	3.8	2.7
HAMILTON COLLEGE/NY	4.6	2.0	4.6	5.6	9.4	7.7	2.6
HOPE COLLEGE/MI	4.5	7.2	3.1	8.1	7.4	2.0	2.2
VASSAR COLLEGE/NY	4.3	3.0	1.8	3.6	3.8	7.1	5.3
BUCKNELL UNIV/PA	4.2	1.9	1.5	3.2	7.7	4.7	5.0
MACALESTER COLL/MN	4.2	2.2	2.1	2.2	6.3	7.6	3.7
COLGATE U/NY	4.1	1.7	3.7	3.6	5.0	6.0	3.9
TRINITY COLLEGE/CT	4.0	2.8	1.6	4.6	6.8	4.9	3.1
DEPAUW UNIVERSITY/IN	4.0	2.9	3.9	5.3	6.3	3.5	1.7
MIDDLEBURY COLL/VT	3.9	3.1	3.2	5.0	4.8	3.6	3.8
MANHATTAN COLLEGE/NY	3.9	1.1	3.4	3.3	7.6	5.3	2.5
MT HOLYOKE COLL/MA	3.9	2.4	2.3	2.7	5.4	6.1	3.2
COLORADO COLLEGE	3.8	1.7	2.2	2.5	5.2	4.7	4.8

000107

TABLE 2C

BA TO PHD PRODUCTIVITY RATIOS FOR LIBERAL ARTS COLLEGES

INSTITUTION	TOTAL PRODUCTIVITY RATIO	1950 %	1955 %	1960 %	1965 %	1970 %	1975 %
ST OLAF COLLEGE/MN	3.8	3.5	3.9	5.4	4.5	3.7	2.3
WHEATON COLLEGE/IL	3.7	2.1	2.6	5.3	5.7	3.5	3.0
DENISON UNIV/OH	3.6	3.1	2.5	3.7	4.7	3.9	3.1
ALBION COLLEGE/MI	3.1	1.8	2.9	5.6	3.0	3.5	2.3
SMITH COLLEGE/MA	3.1	1.5	.6	3.6	5.9	3.0	4.0
OHIO WESLEYAN UNIV	3.0	2.4	2.3	6.0	4.1	2.5	1.6
HOLY CROSS, C OF/MA	2.7	2.1	2.6	2.5	5.4	2.5	1.7
ALMA COLLEGE/MI	2.2	.9	3.8	1.8	4.9	1.7	1.1
HAMPTON UNIV/VA	1.0	.8	1.4	1.0	1.1	2.0	

00v108

TABLE 2D

BA TO PHD PRODUCTIVITY RATIOS FOR PREDOMINATELY WOMEN'S COLLEGES

INSTITUTION	TOTAL PRODUCTIVITY RATIO	1950 %	1955 %	1960 %	1965 %	1970 %	1975 %
RADCLIFFE C/MA	13.4	4.8	4.2	8.9			
BRYN MAWR COLL/PA	7.9	13.6	5.4	7.1	9.6	9.2	5.0
WELLESLEY COLLEGE/MA	4.9	1.4	3.3	3.6	7.5	6.6	6.7
MT HOLYOKE COLL/MA	3.9	2.4	2.3	2.7	5.4	6.1	3.2
SARAH LAWRENCE C/NY	3.5	1.3	7.3	4.6	1.5	3.4	3.6
SMITH COLLEGE/MA	3.1	1.5	.6	3.6	5.9	3.0	4.0
GOUCHER COLLEGE/MD	2.6	1.2	.8	3.8	1.0	4.6	3.3
NOTRE DAME COLL/OH	2.4	2.0			7.8	2.1	1.1
MILLS COLLEGE/CA	2.4	1.9	.9	2.2	3.7	4.0	1.4
CONNECTICUT COLLEGE	2.2			1.3	2.7	2.2	4.0
WELLS COLLEGE/NY	2.2		1.7		1.0	6.3	.9
CHATHAM COLLEGE/PA	2.1	1.3	1.3	4.0	1.7	4.6	
WILSON COLLEGE/PA	1.8	2.1	1.8	1.9	3.5	1.3	
WHEATON COLLEGE/MA	1.8	1.2	1.0	.7	1.7	2.1	2.7
ALBERTUS MAGNUS C/CT	1.8		4.0	1.7	1.3	1.4	2.3
TRINITY COLLEGE/DC	1.8	.9	1.0	1.1	4.9	1.4	
ST JOSEPHS COLL/NY	1.8	1.2	1.4	1.1	1.8	3.7	.7
ROSEMONT COLLEGE/PA	1.7	1.5		3.7	2.4	1.5	.7
BENNINGTON COLL/VT	1.6		1.9		2.5	1.4	2.8
AGNES SCOTT COLL/GA	1.6	1.0	2.2	3.3	1.3	1.4	.8

60v109

TABLE 2D

BA TO PHD PRODUCTIVITY RATIOS FOR PREDOMINATELY WOMEN'S COLLEGES

INSTITUTION	TOTAL PRODUCTIVITY RATIO	1950 %	1955 %	1960 %	1965 %	1970 %	1975 %
SKIDMORE COLLEGE/NY	1.5	1.0		1.7	1.8	2.8	.9
SETON HILL COLL/PA	1.5	2.0	1.2	.9	2.2	1.4	1.4
SIMMONS COLLEGE/MA	1.5	.7		3.7	1.6	2.7	.9
HOOD COLLEGE/MD	1.4		1.4	2.9	2.3	1.8	
EMMANUEL COLLEGE/MA	1.4	.7		1.5	1.9	2.7	.5
MANHATTANVILLE C/NY	1.4	1.1		2.0	1.8	2.1	.7
MT ST VINCENT,COL/NY	1.3	.7	.7	.5	2.4	1.1	2.0
RANDOLPH-MACN WOM/VA	1.3				2.7	1.6	2.6
OUR LADY LAKE UN/TX	1.2	2.3	2.0	.9	1.4	.5	1.1
REGIS COLLEGE/MA	1.2			3.7	1.4	1.5	
ELMIRA COLLEGE/NY	1.2			1.0	1.4	2.0	.8
CHESTNUT HILL C/PA	1.1		.9	.6	1.2	2.1	1.2
MARY WASHINGTON C/VA	1.0	.5			.6	1.7	1.3
INCARNATE WORD C/TX	1.0	.9		1.6	2.2	.9	.6

000010

TABLE 2E

BA TO PHD PRODUCTIVITY RATIOS FOR TRADITIONALLY BLACK COLLEGES

INSTITUTION	TOTAL PRODUCTIVITY RATIO	1950 %	1955 %	1960 %	1965 %	1970 %	1975 %
MOREHOUSE COLL/GA	2.2	1.5	4.7	1.9	5.7	1.2	.9
LINCOLN UNIV/PA	2.1	4.5		1.8	1.2	2.0	1.9
FISK UNIVERSITY/TN	2.0	1.1	2.9	1.7	2.0	1.8	2.6
TUSKEGEE UNIV/AL	2.0	.9	.6	3.1	3.7	2.2	1.5
TOUGALOO COLLEGE/MS	1.8	2.4	5.9	1.6	3.1	1.4	
HOWARD UNIVERSITY/DC	1.7	1.2	.4	1.7	3.7	2.0	1.3
DILLARD UNIV/LA	1.1			.8	3.2	2.3	
NC CENTRAL UNIV	1.0	1.4	.4	.4	1.5	1.1	.9
HAMPTON UNIV/VA	1.0	.8	1.4	1.0	1.1	2.0	
MORGAN STATE UNIV/MD	1.0	.4	1.2	1.5	1.2	1.0	.6
TALLADEGA COLLEGE/AL	1.0	1.4	3.6		1.5		
SPELMAN COLLEGE/GA	.9			1.3	1.0	2.1	.4
CLARK COLLEGE/GA	.9		2.2	3.4	2.0		
NC AG & TECH ST U	.9	.6	.7	1.9	1.0	.9	.6
SOUTHERN UNIV/LA	.8	.4	.3	1.4	.8		.2
VIRGINIA STATE UNIV	.7	.3	.8	2.1	.4	.5	.6
CENTRAL STATE U/OH	.6	1.5	.6	1.5	.3	.2	.3
VIRGINIA UNION UNIV	.6	.5		1.4	1.4		.4
XAVIER UNIV/LA	.6	.5		2.8	.9	.5	
FT VALLEY ST COLL/GA	.5			.6		1.4	.3

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FIGURE 2

PRODUCTIVITY TRENDS BY TYPE OF BACCALAUREATE INSTITUTION

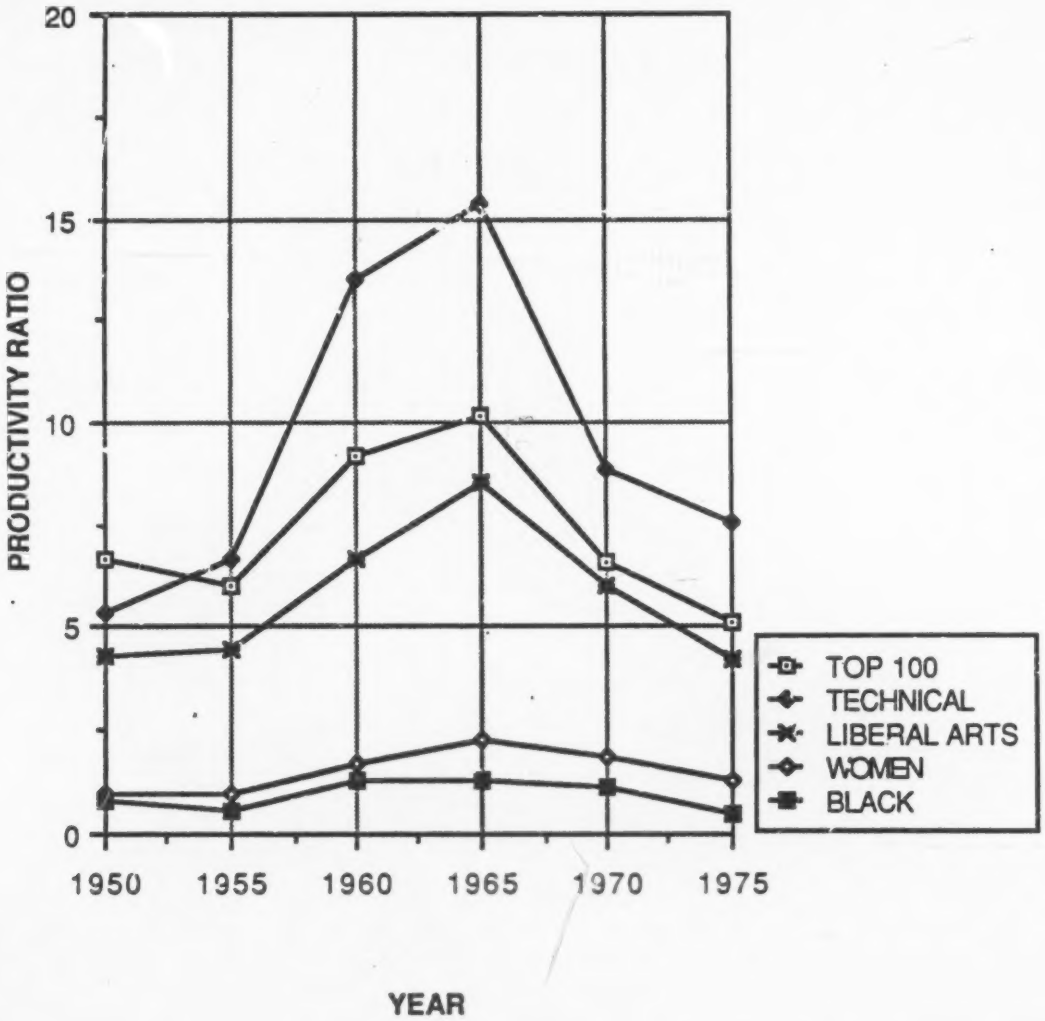

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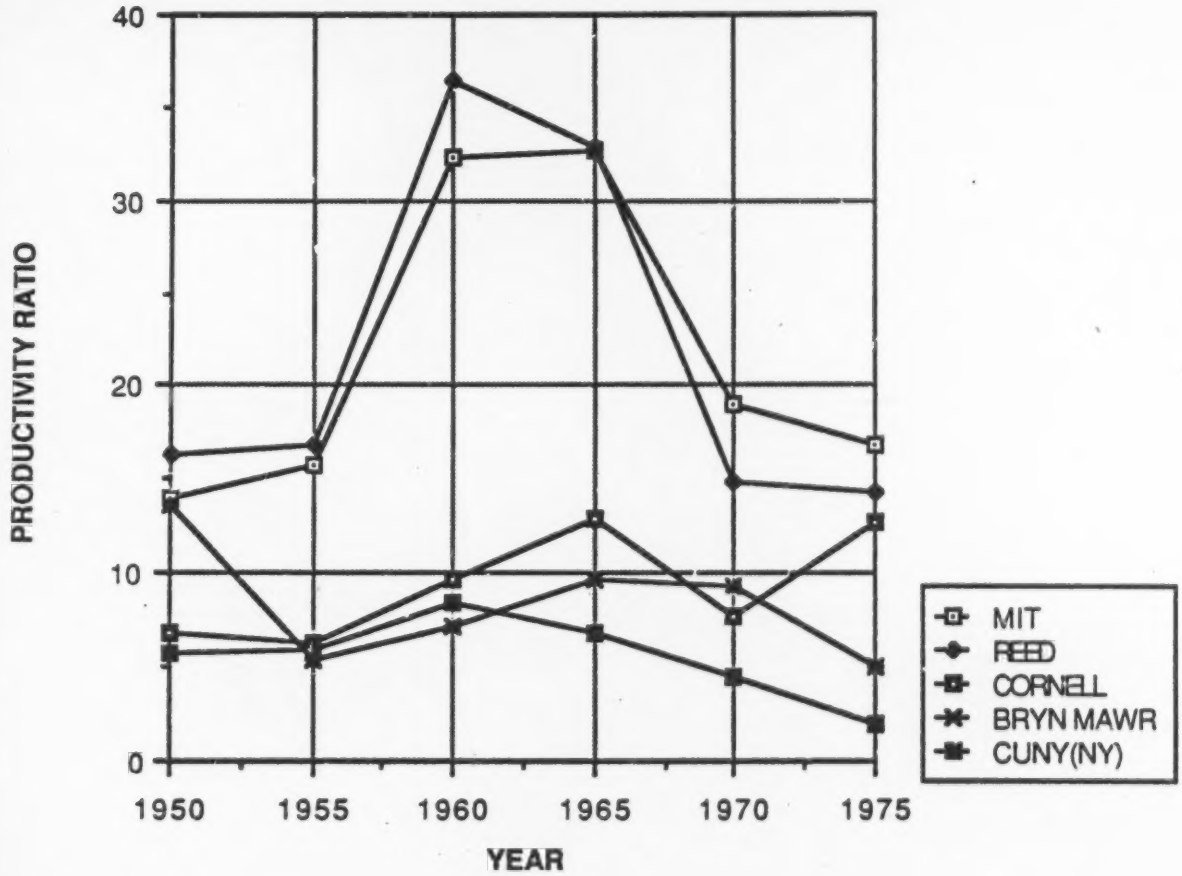
FIGURE 3

PRODUCTIVITY TRENDS BY SELECTED BACCALAUREATE INSTITUTIONS



V. PRODUCTIVITY RATIOS FOR BACCALAUREATE INSTITUTIONS BY FIELD OF PH.D.

Tables 3A through 3E provide information on how baccalaureate graduates from the various types of undergraduate institutions distribute themselves with reference to selected Ph.D. fields of study. The percentages in the tables are a ratio of the total number of Ph.D.s (for the six referenced years) in either EMP, life sciences, or social sciences divided by the total number of Ph.D.s who received their baccalaureate degrees from the specified institutions listed in the tables.

Also provided in this section are the top 50 undergraduate sources of EMP Ph.D.s (table 4), life sciences Ph.D.s (table 5), and social sciences Ph.D.s (table 6).

Top 100 Institutions

Although the leading 100 undergraduate sources of S/E Ph.D.s produced baccalaureates that tended to gravitate to the EMP doctoral programs, there was great diversity in terms of selected doctoral fields across institutions (table 3A).

Forty percent or more of the baccalaureate graduates from 60 of the top 100 undergraduate institutions selected EMP fields for doctoral studies; whereas, only 11 institutions produced similar percentage of graduates who selected the life sciences fields and 29 institutions had 40 percent or more of its graduates going on for Ph.D.s in the social sciences.

Technical Institutions

Technical schools, as one would readily surmise, produced graduates who pursued Ph.D.s in the same areas as their undergraduate training, namely the EMP fields (table 3B).

00v114

Case Western Reserve (OH) and Lehigh University (PA), although similar to the other technical institutions in terms of the skewed distribution of its graduates who specialized in the EMP doctoral fields, produced high percentages (in relationship to other technical schools) of Ph.D. students who specialized in the life sciences and social sciences.

Liberal Arts Colleges

With the exception of Bates College (ME) and Whitman College (WA), the baccalaureate graduates from the liberal arts colleges listed in table 3C tended to focus their doctoral studies in the EMP fields and the social sciences fields.

Noteworthy is the finding that four out of every five baccalaureate graduates from Harvey Mudd who decides to pursue doctoral studies, selected EMP fields as their Ph.D. specialty.

Women's Colleges

Table 3D presents Ph.D. field preference for the leading women's undergraduate sources of S/E Ph.D.s. This table clearly demonstrates a point that was made earlier in the report, and that is women who go on for Ph.D.s tend to concentrate their studies primarily in the social sciences, and secondly in the life sciences.

Female B.A. graduates from Notre Dame College (OH), Our Lady of the Lake University (TX), and Manhattanville College (NY) were exceptions to this field preference. Between 40 and 45 percent of the female graduates who went on to earn Ph.D.s from these schools earned their doctoral degrees in the EMP fields.

Over half of the female B.A. graduates from Mt. St. Vincent College (NY), Mary Washington College (VA), Incarnate Word College (TX), and St. Joseph College (NY),

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concentrated their Ph.D. studies in the life sciences. However, those women's colleges with the highest productivity ratios (3 percent greater) produced baccalaureates who were heavily concentrated in the social sciences Ph.D. fields.

Traditionally Black Colleges

Baccalaureates from predominately black institutions were varied in terms of their selected field of Ph.D. study (table 3E). There was no clear cut pattern for these graduates.

Over 71 percent of the graduates from Spelman College (GA) selected social sciences as their field of graduate study, whereas, Tuskegee University graduates overwhelmingly selected the life sciences (67 percent), and one-half of the baccalaureates from Talladega College (AL) pursued doctoral studies in the EMP fields.

Figure 4 provides a graphic illustration of the Ph.D. field of study selected by baccalaureates from the various types of undergraduate institutions.

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TABLE 3A

FIELD OF PHDS FOR BACCALAUREATE GRADUATES OF THE LEADING 100 UNDERGRADUATE SOURCES OF SCIENCE/ENGINEERING PHDS

INSTITUTION	TOTAL PRODUCTIVITY RATIO*	EMP %	LIFE SCIENCES %	SOCIAL SCIENCES %
CAL INST TECHNOLOGY	44.3	84.0	10.1	5.9
HARVEY MUDD COLL/CA	30.6	88.2	7.4	4.4
MASS INST TECHNOLOGY	21.3	86.1	8.3	5.7
REED COLLEGE/OR	20.7	40.1	19.8	40.1
SWARTHMORE COLL/PA	17.1	33 3	24.1	42.5
COOPER UNION/NY	13.7	92.9	6.3	.8
CHICAGO, UNIV OF/IL	13.5	37.2	23.7	39.0
RADCLIFFE C/MA	13.4	17.5	25.8	56.7
RICE UNIVERSITY/TX	12.0	75.0	13.5	11.5
HAVERFORD COLL/PA	11.7	34.9	31.4	33.7
NEW COLL-SOUTH FLA U	11.6	30.0	16.7	53.3
CARLETON COLLEGE/MN	11.0	41.6	27.3	31.1
POMONA COLLEGE/CA	10.2	40.4	29.8	29.8
GRINNELL COLLEGE/IA	9.9	26.1	28.6	45.4
OBERLIN COLLEGE/OH	9.7	32.9	19.5	47.6
CALIF, U-SAN DIEGO	9.4	42.5	41.7	15.7
ANTIOCH COLLEGE/OH	9.4	29.5	17.9	52.6
CORNELL UNIV/NY	9.3	42.1	37.9	20.0
N MEX I MINING&TECH	9.2	78.8	18.2	3.0
PRINCETON UNIV/NJ	9.0	59.0	13.7	27.3

*NOTE: TOTAL NUMBERS OF S/E PHDS AND PRODUCTIVITY RATIOS ARE BASED ON DATA FROM 1950-51,1955-56,1960-61,1965-66,1970-71, AND 1975-76.

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TABLE 3A

FIELD OF PHDS FOR BACCALAUREATE GRADUATES OF THE LEADING 100 UNDERGRADUATE SOURCES OF SCIENCE/ENGINEERING PHDS

INSTITUTION	TOTAL PRODUCTIVITY RATIO*	EMP %	LIFE SCIENCES %	SOCIAL SCIENCES %
WESLEYAN UNIV/CT	8.9	33.1	17.3	49.6
WABASH COLLEGE/IN	8.9	43.8	34.2	21.9
AMHERST COLLEGE/MA	8.6	38.5	19.6	42.0
EARLHAM COLLEGE/IN	8.5	41.7	37.5	20.8
HAMPSHIRE COLL/MA	8.4	15.0	35.0	50.0
CALIF, U-BERKELEY	8.3	44.2	26.2	29.6
RENSSELAER POLY I/NY	8.2	82.9	11.1	6.0
POLYTECHNIC UNIV/NY	8.1	95.2	2.9	1.9
BRYN MAWR COLL/PA	7.9	22.7	21.3	56.0
CALIF,U-RIVERSIDE	7.9	38.1	29.6	32.3
JOHNS HOPKINS U/MD	7.9	48.9	28.6	22.5
BRANDEIS UNIV/MA	7.9	21.6	25.7	52.7
HARVARD UNIV/MA	7.5	40.3	19.3	40.4
ST JOHNS COLLEGE/MD	7.2	11.1	22.2	66.7
FRNKLN&MARSHAL C/PA	7.2	47.0	21.6	31.3
WOOSTER, COLL OF/OH	7.0	46.2	21.0	32.8
KALAMAZOO COLLEGE/MI	7.0	43.1	32.3	24.5
YALE UNIVERSITY/CT	6.9	46.6	16.6	36.8
CARNEGIE-MELLON U/PA	6.8	84.5	6.9	8.7
CALIF,U-SANTA CRUZ	6.7	28.2	30.0	41.8

*NOTE: TOTAL NUMBERS OF S/E PHDS AND PRODUCTIVITY RATIOS ARE BASED ON DATA FROM 1950-51,1955-56,1960-61,1965-66,1970-71, AND 1975-76.

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TABLE 3A

FIELD OF PHDS FOR BACCALAUREATE GRADUATES OF THE LEADING 100 UNDERGRADUATE SOURCES OF SCIENCE/ENGINEERING PHDS

INSTITUTION	TOTAL PRODUCTIVITY RATIO*	EMP %	LIFE SCIENCES %	SOCIAL SCIENCES %
WILLIAMS COLLEGE/MA	6.5	39.8	20.4	39.8
BROWN UNIVERSITY/RI	6.5	48.0	19.6	32.4
ROCHESTER,UNIV OF/NY	6.5	44.7	21.9	33.4
WEBB I NAVAL ARCH/NY	6.4	100.0		
PHILA C PHARM&SCI/PA	6.4	21.2	78.8	
SUNY AT STONY BROOK	6.3	38.2	24.6	37.2
STANFORD UNIV/CA	6.3	42.7	22.5	34.8
WORCESTER POLY I/MA	6.3	92.5	7.5	
CASE WESTRN RSRVE/OH	6.2	66.2	16.3	17.5
BOWDOIN COLLEGE/ME	6.2	49.4	24.7	26.0
KNOX COLLEGE/IL	6.0	41.3	24.0	34.7
STEVENS INST TECH/NJ	5.8	90.0	5.0	5.0
DAVIDSON COLLEGE/NC	5.8	51.4	14.9	33.8
CALIF,U-LOS ANGELES	5.7	37.1	24.2	38.7
UNION UNIVERSITY/NY	5.7	54.2	21.5	24.3
ECKERD COLLEGE/FL	5.7	25.0	29.2	45.8
CALIF, U-DAVIS	5.7	16.9	64.4	18.7
CUNY-CITY COLLEGE	5.6	47.2	15.1	37.7
BLACKBURN COLLEGE/IL	5.6	28.6	33.3	38.1
LAWRENCE UNIV/WI	5.5	31.9	27.5	40.6

*NOTE: TOTAL NUMBERS OF S/E PHDS AND PRODUCTIVITY RATIOS ARE BASED ON DATA FROM 1950-51,1955-56,1960-61,1965-66,1970-71, AND 1975-76.

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TABLE 3A

FIELD OF PHDS FOR BACCALAUREATE GRADUATES OF THE LEADING 100 UNDERGRADUATE SOURCES OF SCIENCE/ENGINEERING PHDS

INSTITUTION	TOTAL PRODUCTIVITY RATIO*	EMP %	LIFE SCIENCES %	SOCIAL SCIENCES %
DARTMOUTH COLLEGE/NH	5.4	46.0	18.7	35.3
BATES COLLEGE/ME	5.4	24.2	43.5	32.3
COLUMBIA UNIV/NY	5.4	37.5	20.7	41.8
DELAWARE VALLEY C/PA	5.4	5.9	94.1	
CLARK UNIVERSITY/MA	5.3	20.7	23.9	55.4
BELOIT COLLEGE/WI	5.3	43.1	23.6	33.3
ILL BENEDICTINE COLL	5.3	52.0	36.0	12.0
OCCIDENTAL COLL/CA	5.2	40.6	18.9	40.6
KING COLLEGE/TN	5.2	73.3	20.0	6.7
JUNIATA COLLEGE/PA	5.2	51.9	24.1	24.1
SUNY AT BINGHAMTON	5.2	30.5	27.5	42.0
LAFAYETTE COLLEGE/PA	5.1	57.3	20.5	22.2
ILLINOIS INST TECH	5.1	87.2	4.3	8.5
MUHLENBERG COLL/PA	5.1	39.0	50.6	10.4
WHITMAN COLLEGE/WA	5.0	30.8	40.4	28.8
WELLESLEY COLLEGE/MA	4.9	7.6	32.2	60.2
CALIF,U-IRVINE	4.9	28.4	51.0	20.6
LEHIGH UNIVERSITY/PA	4.8	75.8	12.1	12.1
US MILITARY ACADEMY	4.8	63.6	1.0	35.4
SUNY ENVR SCI FRSTRY	4.8	26.9	63.5	9.6

*NOTE: TOTAL NUMBERS OF S/E PHDS AND PRODUCTIVITY RATIOS ARE BASED ON DATA FROM 1950-51,1955-56,1960-61,1965-66,1970-71, AND 1975-76.

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TABLE 3A

FIELD OF PHDS FOR BACCALAUREATE GRADUATES OF THE LEADING 100 UNDERGRADUATE SOURCES OF SCIENCE/ENGINEERING PHDS

INSTITUTION	TOTAL PRODUCTIVITY RATIO*	EMP %	LIFE SCIENCES %	SOCIAL SCIENCES %
RHODES COLLEGE/TN	4.7	48.8	14.6	36.6
US MERCHANT MAR ACAD	4.7	77.8	11.1	11.1
KENYON COLLEGE/OH	4.6	42.5	17.5	40.0
BARD COLLEGE/NY	4.6	10.0	45.0	45.0
HAMILTON COLLEGE/NY	4.6	33.3	26.7	40.0
CENTRE COLL KENTUCKY	4.6	48.3	27.6	24.1
DUKE UNIVERSITY/NC	4.6	40.8	29.1	30.1
LEBANON VALLEY C/PA	4.5	51.1	24.4	24.4
COLORADO SCH MINES	4.5	98.2		1.8
HOPE COLLEGE/MI	4.5	50.0	31.1	18.9
DREW UNIVERSITY/NJ	4.4	33.3	31.4	35.3
BEREA COLLEGE/KY	4.3	34.4	39.3	26.2
CHARLESTON, C OF/SC	4.3	42.3	38.5	19.2
PITZER COLLEGE/CA	4.3		50.0	50.0
S DAKOTA S MINE&TECH	4.3	91.1	8.9	
VASSAR COLLEGE/NY	4.3	19.6	29.3	51.1
IOWA STATE UNIV	4.3	47.1	38.8	14.0
YESHIVA UNIV/NY	4.2	40.0	15.4	44.6
BUCKNELL UNIV/PA	4.2	40.0	22.3	37.7
MACALESTER COLL/MN	4.2	22.2	27.8	50.0

*NOTE: TOTAL NUMBERS OF S/E PHDS AND PRODUCTIVITY RATIOS ARE BASED ON DATA FROM 1950-51,1955-56,1960-61,1965-66,1970-71, AND 1975-76.

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TABLE 3B

FIELD OF PHDS FOR BACCALAUREATE GRADUATES OF TECHNICAL INSTITUTIONS

INSTITUTION	TOTAL PRODUCTIVITY RATIO*	EMP %	LIFE SCIENCES %	SOCIAL SCIENCES %
CAL INST TECHNOLOGY	44.3	84.0	10.1	5.9
MASS INST TECHNOLOGY	21.3	86.1	8.3	5.7
N MEX I MINING&TECH	9.2	78.8	18.2	3.0
RENSSELAER POLY I/NY	8.2	82.9	11.1	6.0
POLYTECHNIC UNIV/NY	8.1	95.2	2.9	1.9
CARNEGIE-MELLON U/PA	6.8	84.5	6.9	8.7
WEBB I NAVAL ARCH/NY	6.4	100.0		
WORCESTER POLY I/MA	6.3	92.5	7.5	
CASE WESTRN RSRVE/OH	6.2	66.2	16.3	17.5
STEVENS INST TECH/NJ	5.8	90.0	5.0	5.0
ILLINOIS INST TECH	5.1	87.2	4.3	8.6
LEHIGH UNIVERSITY/PA	4.8	75.8	12.1	12.1
COLORADO SCH MINES	4.5	98.2		1.8
S DAKOTA S MINE&TECH	4.3	91.1	8.9	
ROSE-HULMAN TECH/IN	3.5	88.9	3.7	7.4

*NOTE: TOTAL NUMBERS OF S/E PHDS AND PRODUCTIVITY RATIOS ARE BASED ON DATA FROM 1950-51,1955-56,1960-61,1965-66,1970-71, AND 1975-76.

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TABLE 3C

FIELD OF PHDS FOR BACCALAUREATE GRADUATES OF LIBERAL ARTS COLLEGES

INSTITUTION	TOTAL PRODUCTIVITY RATIO*	EMP %	LIFE SCIENCES %	SOCIAL SCIENCES %
HARVEY MUDD COLL/CA	30.6	88.2	7.4	4.4
REED COLLEGE/OR	20.7	40.1	19.8	40.1
SWARTHMORE COLL/PA	17.1	33.3	24.1	42.5
HAVERFORD COLL/PA	11.7	34.9	31.4	33.7
CARLETON COLLEGE/MN	11.0	41.6	27.3	31.1
POMONA COLLEGE/CA	10.2	40.4	29.8	29.8
GRINNELL COLLEGE/IA	9.9	26.1	28.6	45.4
OBERLIN COLLEGE/OH	9.7	32.9	19.5	47.6
ANTIOCH COLLEGE/OH	9.4	29.5	17.9	52.6
WESLEYAN UNIV/CT	8.9	33.1	17.3	49.6
WABASH COLLEGE/IN	8.9	43.8	34.2	21.9
AMHERST COLLEGE/MA	8.6	38.5	19.6	42.0
EARLHAM COLLEGE/IN	8.5	41.7	37.5	20.8
BRYN MAWR COLL/PA	7.9	22.7	21.3	56.0
FRNKLN&MARSHAL C/PA	7.2	47.0	21.6	31.3
WOOSTER, COLL OF/OH	7.0	46.2	21.0	32.8
KALAMAZOO COLLEGE/MI	7.0	43.1	32.3	24.6
WILLIAMS COLLEGE/MA	6.5	39.8	20.4	39.8
BOWDOIN COLLEGE/ME	6.2	49.4	24.7	26.0
DAVIDSON COLLEGE/NC	5.8	51.4	14.9	33.8

*NOTE: TOTAL NUMBERS OF S/E PHDS AND PRODUCTIVITY RATIOS ARE BASED ON DATA FROM 1950-51,1955-56,1960-61,1965-66,1970-71, AND 1975-76.

000123

TABLE 3C

FIELD OF PHDS FOR BACCALAUREATE GRADUATES OF LIBERAL ARTS COLLEGES

INSTITUTION	TOTAL PRODUCTIVITY RATIO*	EMP %	LIFE SCIENCES %	SOCIAL SCIENCES %
UNION UNIVERSITY/NY	5.7	54.2	21.5	24.3
BATES COLLEGE/ME	5.4	24.2	43.5	32.3
BELOIT COLLEGE/WI	5.3	43.1	23.6	33.3
OCCIDENTAL COLL/CA	5.2	40.6	18.9	40.6
LAFAYETTE COLLEGE/PA	5.1	57.3	20.5	22.2
WHITMAN COLLEGE/WA	5.0	30.8	40.4	28.8
WELLESLEY COLLEGE/MA	4.9	7.6	32.2	60.2
KENYON COLLEGE/OH	4.6	42.5	17.5	40.0
HAMILTON COLLEGE/NY	4.6	33.3	26.7	40.0
HOPE COLLEGE/MI	4.5	50.0	31.1	18.9
VASSAR COLLEGE/NY	4.3	19.6	29.3	51.1
BUCKNELL UNIV/PA	4.2	40.0	22.3	37.7
MACALESTER COLL/MN	4.2	22.2	27.8	50.0
COLGATE U/NY	4.1	33.3	26.4	40.2
TRINITY COLLEGE/CT	4.0	41.9	27.4	30.6
DEPAUW UNIVERSITY/IN	4.0	32.0	21.4	46.6
MIDDLEBURY COLL/VT	3.9	41.3	26.7	32.0
MANHATTAN COLLEGE/NY	3.9	64.4	18.8	16.9
MT HOLYOKE COLL/MA	3.9	22.0	32.9	45.1
COLORADO COLLEGE	3.8	39.3	21.3	39.3

*NOTE: TOTAL NUMBERS OF S/E PHDS AND PRODUCTIVITY RATIOS ARE BASED ON DATA FROM 1950-51,1955-56,1960-61,1965-66,1970-71, AND 1975-76.

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TABLE 3C

FIELD OF PHDS FOR BACCALAUREATE GRADUATES OF LIBERAL ARTS COLLEGES

INSTITUTION	TOTAL PRODUCTIVITY RATIO*	EMP %	LIFE SCIENCES %	SOCIAL SCIENCES %
ST OLAF COLLEGE/MN	3.8	47.9	27.7	24.5
WHEATON COLLEGE/IL	3.7	34.0	21.3	44.7
DENISON UNIV/OH	3.6	17.1	30.0	52.9
ALBION COLLEGE/MI	3.1	32.1	37.7	30.2
SMITH COLLEGE/MA	3.1	10.6	36.2	53.2
OHIO WESLEYAN UNIV	3.0	32.6	30.2	37.2
HOLY CROSS, C OF/MA	2.7	41.9	21.6	36.5
ALMA COLLEGE/MI	2.2	36.4	27.3	36.4
HAMPTON UNIV/VA	1.0	30.0	35.0	35.0

*NOTE: TOTAL NUMBERS OF S/E PHDS AND PRODUCTIVITY RATIOS ARE BASED ON DATA FROM 1950-51,1955-56,1960-61,1965-66,1970-71, AND 1975-76.

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TABLE 3D

FIELD OF PHDS FOR BACCALAUREATE GRADUATES OF PREDOMINATELY WOMEN'S COLLEGES

INSTITUTION	TOTAL PRODUCTIVITY RATIO*	EMP %	LIFE SCIENCES %	SOCIAL SCIENCES %
RADCLIFFE C/MA	13.4	17.3	25.8	56.7
BRYN MAWR COLL/PA	7.9	22.7	21.3	56.0
WELLESLEY COLLEGE/MA	4.9	7.6	32.2	60.2
MT HOLYOKE COLL/MA	3.9	22.0	32.9	45.1
SARAH LAWRENCE C/NY	3.5		11.5	88.5
SMITH COLLEGE/MA	3.1	10.6	36.2	53.2
GOUCHER COLLEGE/MD	2.6	17.9	32.1	50.0
NOTRE DAME COLL/OH	2.4	45.5	36.4	18.2
MILLS COLLEGE/CA	2.4	10.0	25.0	65.0
CONNECTICUT COLLEGE	2.2	9.1	30.3	60.6
WELLS COLLEGE/NY	2.2	16.7	50.0	33.3
CHATHAM COLLEGE/PA	2.1	23.1	30.8	46.2
WILSON COLLEGE/PA	1.8	36.4	36.4	27.3
WHEATON COLLEGE/MA	1.8	25.0	40.0	35.0
ALBERTUS MAGNUS C/CT	1.8	25.0	50.0	25.0
TRINITY COLLEGE/DC	1.8	12.5	37.5	50.0
ST JOSEPHS COLL/NY	1.8	23.1	53.8	23.1
ROSEMONT COLLEGE/PA	1.7	36.4	27.3	36.4
BENNINGTON COLL/VT	1.6	14.3	14.3	71.4
AGNES SCOTT COLL/GA	1.6	16.7	25.0	58.3

*NOTE: TOTAL NUMBERS OF S/E PHDS AND PRODUCTIVITY RATIOS ARE BASED ON DATA FROM 1950-51,1955-56,1960-61,1965-66,1970-71, AND 1975-76.

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TABLE 3D

FIELD OF PHDS FOR BACCALAUREATE GRADUATES OF PREDOMINATELY WOMEN'S COLLEGES

INSTITUTION	TOTAL PRODUCTIVITY RATIO*	EMP %	LIFE SCIENCES %	SOCIAL SCIENCES %
SKIDMORE COLLEGE/NY	1.5	12.0	40.0	48.0
SETON HILL COLL/PA	1.5	8.3	58.3	33.3
SIMMONS COLLEGE/MA	1.5	6.9	48.3	44.8
HOOD COLLEGE/MD	1.4		50.0	50.0
EMMANUEL COLLEGE/MA	1.4	14.3	38.1	47.6
MANHATTANVILLE C/NY	1.4	40.0	26.7	33.3
MT ST VINCENT,COL/NY	1.3	21.4	57.1	21.4
RANDOLPH-MACN WOM/VA	1.3	27.3	63.6	9.1
OUR LADY LAKE UN/TX	1.2	45.5	27.3	27.3
REGIS COLLEGE/MA	1.2	30.8	38.5	30.8
ELMIRA COLLEGE/NY	1.2	23.1	46.2	30.8
CHESTNUT HILL C/PA	1.1	18.2	45.5	36.4
MARY WASHINGTON C/VA	1.0	12.5	56.3	31.3
INCARNATE WORD C/TX	1.0	9.1	54.5	36.4

*NOTE: TOTAL NUMBERS OF S/E PHDS AND PRODUCTIVITY RATIOS ARE BASED ON DATA FROM 1950-51,1955-56,1960-61,1965-66,1970-71, AND 1975-76.

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TABLE 3E

FIELD OF PHDS FOR BACCALAUREATE GRADUATES OF TRADITIONALLY BLACK COLLEGES

INSTITUTION	TOTAL PRODUCTIVITY RATIO*	EMP %	LIFE SCIENCES %	SOCIAL SCIENCES %
MOREHOUSE COLL/GA	2.2	38.9	22.2	38.9
LINCOLN UNIV/PA	2.1	26.7	20.0	53.3
FISK UNIVERSITY/TN	2.0	25.0	15.0	60.0
TUSKEGEE UNIV/AL	2.0	11.6	67.4	20.9
TOUGALOO COLLEGE/MS	1.8	25.0	41.7	33.3
HOWARD UNIVERSITY/DC	1.7	36.7	31.6	31.6
DILLARD UNIV/LA	1.1	30.0	50.0	20.0
NC CENTRAL UNIV	1.0	22.7	40.9	36.4
HAMPTON UNIV/VA	1.0	30.0	35.0	35.0
MORGAN STATE UNIV/MD	1.0	39.1	13.0	47.8
TALLADEGA COLLEGE/AL	1.0	50.0	25.0	25.0
SPELMAN COLLEGE/GA	.9		28.6	71.4
CLARK COLLEGE/GA	.9	14.3	57.1	28.6
NC AG & TECH ST U	.9	22.7	31.8	45.5
SOUTHERN UNIV/LA	.8	29.6	48.1	22.2
VIRGINIA STATE UNIV	.7	40.0	33.3	26.7
CENTRAL STATE U/OH	.6		33.3	66.7
VIRGINIA UNION UNIV	.6	33.3	50.0	16.7
XAVIER UNIV/LA	.6	42.9	57.1	
FT VALLEY ST COLL/GA	.5		71.4	28.6

*NOTE: TOTAL NUMBERS OF S/E PHDS AND PRODUCTIVITY RATIOS ARE BASED ON DATA FROM 1950-51,1955-56,1960-61,1965-66,1970-71, AND 1975-76.

00v128

TABLE 4

TOP 50 UNDERGRADUATE SOURCES OF EMP PHDS
(RANKED BY # EMP PHDS/TOTAL BACCALAUREATES)

RANK	INSTITUTION	TOTAL PRODUCTIVITY RATIO	EMP %
1	CAL INST TECHNOLOGY	44.3	37.3
2	HARVEY MUDD COLL/CA	30.6	27.0
3	MASS INST TECHNOLOGY	21.3	18.3
4	COOPER UNION/NY	13.7	12.7
5	RICE UNIVERSITY/TX	12.0	9.0
6	REED COLLEGE/OR	20.7	8.3
7	POLYTECHNIC UNIV/NY	8.1	7.7
8	N MEX I MINING&TECH	9.2	7.2
9	RENSSELAER POLY I/NY	8.2	6.8
10	WEBB I NAVAL ARCH/NY	6.4	6.4
11	CARNEGIE-MELLON U/PA	6.8	5.8
11	WORCESTER POLY I/MA	6.3	5.8
13	SWARTHMORE COLL/PA	17.1	5.7
14	PRINCETON UNIV/NJ	9.0	5.3
15	STEVENS INST TECH/NJ	5.8	5.2
16	CHICAGO, UNIV OF/IL	13.5	5.0
17	CARLETON COLLEGE/MN	11.0	4.6
18	ILLINOIS INST TECH	5.1	4.5
19	COLORADO SCH MINES	4.5	4.4
20	HAVERFORD COLL/PA	11.7	4.1

000129

TABLE 4

TOP 50 UNDERGRADUATE SOURCES OF EMP PHDS
(RANKED BY # EMP PHDS/TOTAL BACCALAUREATES)

RANK	INSTITUTION	TOTAL PRODUCTIVITY RATIO	EMP %
20	POMONA COLLEGE/CA	10.2	4.1
20	CASE WESTRN RSRVE/OH	6.2	4.1
23	CALIF, U-SAN DIEGO	9.4	4.0
23	PARKS,ST LOUIS U/IL	4.0	4.0
25	S DAKOTA S MINE&TECH	4.3	3.9
25	JOHNS HOPKINS U/MD	7.9	3.9
25	WABASH COLLEGE/IN	8.9	3.9
25	CORNELL UNIV/NY	9.3	3.9
29	KING COLLEGE/TN	5.2	3.8
30	CALIF. U-BERKELEY	8.3	3.7
31	US MERCHANT MAR ACAD	4.7	3.6
31	LEHIGH UNIVERSITY/PA	4.8	3.6
31	EARLHAM COLLEGE/IN	8.5	3.6
34	NEW COLL-SOUTH FLA U	11.6	3.5
35	FRNKLN&MARSHAL C/PA	7.2	3.4
35	MONT C MINRL SC&TECH	3.4	3.4
37	AMHERST COLLEGE/MA	8.6	3.3
37	US NAVAL ACADEMY/MD	3.8	3.3
39	OBERLIN COLLEGE/OH	9.7	3.2
39	WOOSTER, COLL OF/OH	7.0	3.2

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TABLE 4

TOP 50 UNDERGRADUATE SOURCES OF EMP PHDS
(RANKED BY # EMP PHDS/TOTAL BACCALAUREATES)

RANK	INSTITUTION	TOTAL PRODUCTIVITY RATIO	EMP %
39	YALE UNIVERSITY/CT	6.9	3.2
42	UNION UNIVERSITY/NY	5.7	3.1
42	BOWDOIN COLLEGE/ME	6.2	3.1
42	ROSE-HULMAN TECH/IN	3.5	3.1
42	BROWN UNIVERSITY/RI	6.5	3.1
46	CLARKSON UNIV/NY	3.2	3.0
46	DAVIDSON COLLEGE/NC	5.8	3.0
46	CALIF,U-RIVERSIDE	7.9	3.0
46	US MILITARY ACADEMY	4.8	3.0
46	KALAMAZOO COLLEGE/MI	7.0	3.0

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TABLE 5

TOP 50 UNDERGRADUATE SOURCES OF LIFE SCIENCES PHDS
(RANKED BY # LIFE SCIENCES PHDS/TOTAL BACCALAUREATES)

RANK	INSTITUTION	TOTAL PRODUCTIVITY RATIO	LIFE SCIENCES %
1	PHILA C PHARM&SCI/PA	6.4	5.1
1	DELAWARE VALLEY C/PA	5.4	5.1
3	CAL INST TECHNOLOGY	44.3	4.5
4	SWARTHMORE COLL/PA	17.1	4.1
4	REED COLLEGE/OR	20.7	4.1
6	CALIF. U-SAN DIEGO	9.4	3.9
7	CALIF. U-DAVIS	5.7	3.7
7	HAVERFORD COLL/PA	11.7	3.7
9	RADCLIFFE C/MA	13.4	3.5
9	CORNELL UNIV/NY	9.3	3.5
11	CHICAGO, UNIV OF/IL	13.5	3.2
11	EARLHAM COLLEGE/IN	8.5	3.2
13	SUNY ENVR SCI FRSTRY	4.8	3.1
14	WABASH COLLEGE/IN	8.9	3.0
14	CARLETON COLLEGE/MN	11.0	3.0
14	POMONA COLLEGE/CA	10.2	3.0
17	HAMPSHIRE COLL/MA	8.4	2.9
18	GRINNELL COLLEGE/IA	9.9	2.8
19	MUHLENBERG COLL/PA	5.1	2.6
20	CALIF.U-IRVINE	4.9	2.5

TABLE 5

TOP 50 UNDERGRADUATE SOURCES OF LIFE SCIENCES PHDS
(RANKED BY # LIFE SCIENCES PHDS/TOTAL BACCALAUREATES)

RANK	INSTITUTION	TOTAL PRODUCTIVITY RATIO	LIFE SCIENCES %
21	BATES COLLEGE/ME	5.4	2.3
21	MASS COLL PHARMACY	3.5	2.3
21	KALAMAZOO COLLEGE/MI	7.0	2.3
21	HARVEY MUDD COLL/CA	30.6	2.3
21	JOHNS HOPKINS U/MD	7.9	2.3
21	CALIF,U-RIVERSIDE	7.9	2.3
27	CALIF, U-BERKELEY	8.3	2.2
28	BARD COLLEGE/NY	4.6	2.1
28	PITZER COLLEGE/CA	4.3	2.1
30	BRANDEIS UNIV/MA	7.9	2.0
30	CALIF,U-SANTA CRUZ	6.7	2.0
30	ST THOMAS, U OF/TX	4.0	2.0
30	WHITMAN COLLEGE/WA	5.0	2.0
34	ILL BENEDICTINE COLL	5.3	1.9
34	NEW COLL-SOUTH FLA U	11.6	1.9
34	BLACKBURN COLLEGE/IL	5.6	1.9
34	OBERLIN COLLEGE/OH	9.7	1.9
34	UTAH STATE UNIV	3.2	1.9
34	COLORADO STATE UNIV	2.9	1.9
40	NEW MEXICO STATE U	4.0	1.8

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TABLE 5

TOP 50 UNDERGRADUATE SOURCES OF LIFE SCIENCES PHDS
(RANKED BY # LIFE SCIENCES PHDS/TOTAL BACCALAUREATES)

RANK	INSTITUTION	TOTAL PRODUCTIVITY RATIO	LIFE SCIENCES %
40	MASS INST TECHNOLOGY	21.3	1.8
42	BRYN MAWR COLL/PA	7.9	1.7
42	BEREA COLLEGE/KY	4.3	1.7
42	CORNELL COLLEGE/IA	4.2	1.7
42	N MEX I MINING&TECH	9.2	1.7
42	ECKERD COLLEGE/FL	5.7	1.7
42	WASH&JEFFERSON C/PA	3.9	1.7
42	IOWA STATE UNIV	4.3	1.7
42	AMHERST COLLEGE/MA	8.6	1.7
42	ANTIOCH COLLEGE/OH	9.4	1.7

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TABLE 6

TOP 50 UNDERGRADUATE SOURCES OF SOCIAL SCIENCES PHDS
(RANKED BY # SOCIAL SCIENCES PHDS/TOTAL BACCALAUREATES)

RANK	INSTITUTION	TOTAL PRODUCTIVITY RATIO	SOCIAL SCIENCES %
1	REED COLLEGE/OR	20.7	8.3
2	RADCLIFFE C/MA	13.4	7.6
3	SWARTHMORE COLL/PA	17.1	7.3
4	NEW COLL-SOUTH FLA U	11.6	6.2
5	CHICAGO, UNIV OF/IL	13.5	5.3
6	ANTIOCH COLLEGE/OH	9.4	4.9
7	ST JOHNS COLLEGE/MD	7.2	4.8
8	OBERLIN COLLEGE/OH	9.7	4.6
9	GRINNELL COLLEGE/IA	9.9	4.5
10	BRYN MAWR COLL/PA	7.9	4.4
10	WESLEYAN UNIV/CT	8.9	4.4
12	BRANDEIS UNIV/MA	7.9	4.2
12	HAMPSHIRE COLL/MA	8.4	4.2
14	HAVERFORD COLL/PA	11.7	4.0
14	NEW SCH SOC RSCH/NY	4.0	4.0
16	AMHERST COLLEGE/MA	8.6	3.6
17	CARLETON COLLEGE/MN	11.0	3.4
18	SARAH LAWRENCE C/NY	3.5	3.1
19	POMONA COLLEGE/CA	10.2	3.0
19	HARVARD UNIV/MA	7.5	3.0

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TABLE 6

TOP 50 UNDERGRADUATE SOURCES OF SOCIAL SCIENCES PHDS
(RANKED BY # SOCIAL SCIENCES PHDS/TOTAL BACCALAUREATES)

RANK	INSTITUTION	TOTAL PRODUCTIVITY RATIO	SOCIAL SCIENCES %
19	WELLESLEY COLLEGE/MA	4.9	3.0
22	CLARK UNIVERSITY/MA	5.3	2.9
23	CALIF,U-SANTA CRUZ	6.7	2.8
24	CATHED C IM CONCP/NY	2.7	2.7
25	CAL INST TECHNOLOGY	44.3	2.6
25	ECKERD COLLEGE/FL	5.7	2.6
25	WILLIAMS COLLEGE/MA	6.5	2.6
28	CALIF,U-RIVERSIDE	7.9	2.5
28	CALIF, U-BERKELEY	8.3	2.5
28	PRINCETON UNIV/NJ	9.0	2.5
28	YALE UNIVERSITY/CT	6.9	2.5
32	SUNY AT STONY BROOK	6.3	2.3
32	COLUMBIA UNIV/NY	5.4	2.3
32	FRNKLN&MARSHAL C/PA	7.2	2.3
32	WESTMONT COLLEGE/CA	3.1	2.3
32	WOOSTER, COLL OF/OH	7.0	2.3
37	LAWRENCE UNIV/WI	5.5	2.2
37	BLACKBURN COLLEGE/IL	5.6	2.2
37	STANFORD UNIV/CA	6.3	2.2
37	CALIF,U-LOS ANGELES	5.7	2.2

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TABLE 6

TOP 50 UNDERGRADUATE SOURCES OF SOCIAL SCIENCES PHDS
(RANKED BY # SOCIAL SCIENCES PHDS/TOTAL BACCALAUREATES)

RANK	INSTITUTION	TOTAL PRODUCTIVITY RATIO	SOCIAL SCIENCES %
37	SUNY AT BINGHAMTON	5.2	2.2
37	ROCHESTER,UNIV OF/NY	6.5	2.2
37	ASSUMPTION COLL/MA	2.6	2.2
37	VASSAR COLLEGE/NY	4.3	2.2
45	KNOX COLLEGE/IL	6.0	2.1
45	CUNY-CITY COLLEGE	5.6	2.1
45	PITZER COLLEGE/CA	4.3	2.1
45	OCCIDENTAL COLL/CA	3.2	2.1
45	MACALESTER COLL/MN	4.2	2.1
45	BROWN UNIVERSITY/RI	6.5	2.1

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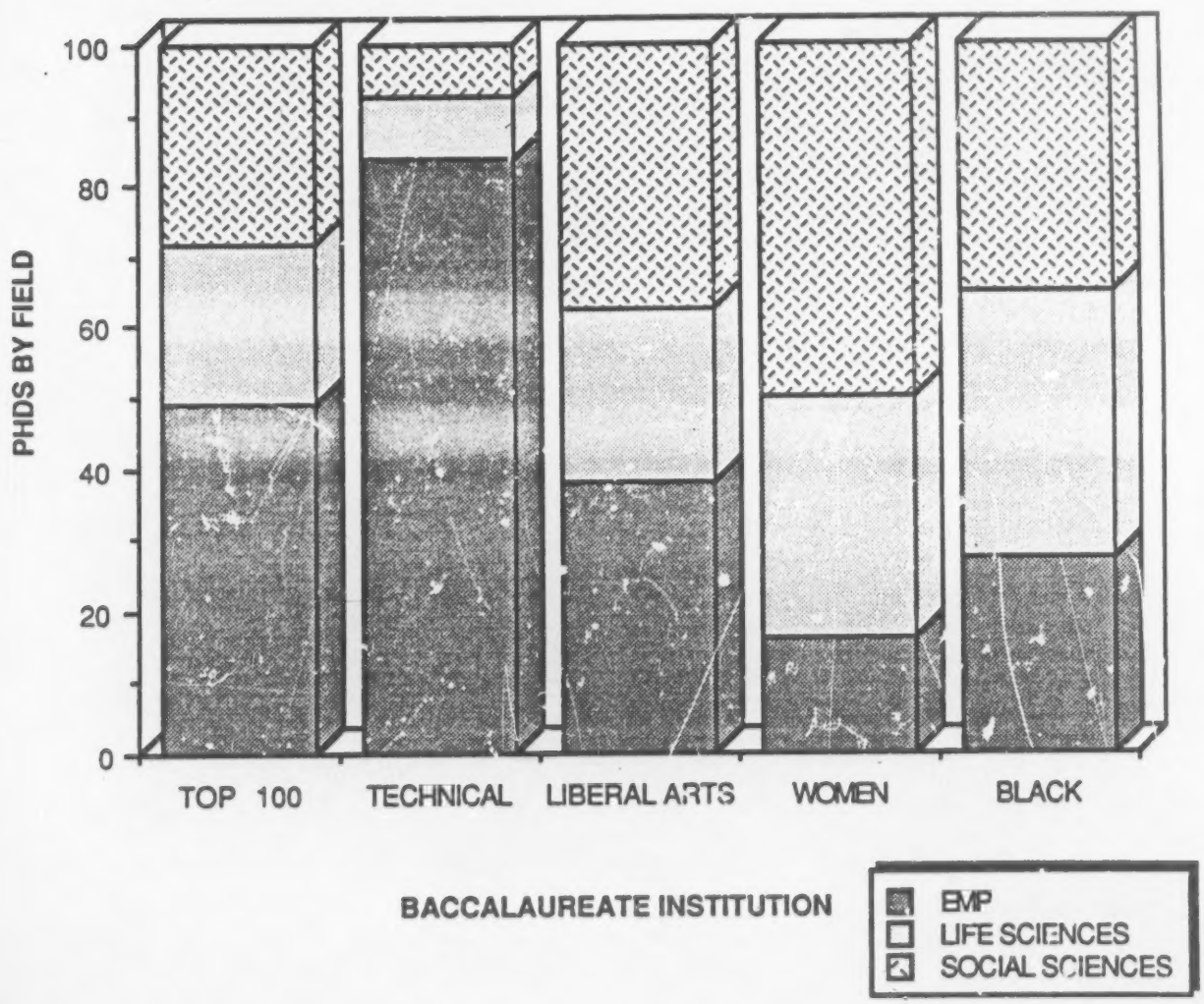
FIGURE 4

PHDS BY FIELD OF DOCTORATE AND TYPE OF BA INSTITUTION



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VI. BACCALAUREATE ORIGIN OF SCIENCE/ENGINEERING PH.D.S WHO ENTER S/E EMPLOYMENT FIELDS AND PURSUE RESEARCH CAREERS

One of the original intents of the analysis of baccalaureate origins was to trace those individuals who had earned S/E doctorates to determine what percentage were employed in science/engineering fields as of 1985, and what percentage were actually engaged in basis or applied research.

The Ph.D. recipients that were the focus of this study were tagged to the information they had supplied in response to NRC's Survey of Doctorate Recipients (SDR) questionnaires. However, when the matching was completed and the sample weights from the SDR were assigned to the few individuals who also were included in the SDR sample, the estimates of the percentages of Ph.D.s who indicated they were employed in S/E in 1985 often exceeded the number of Ph.D.s in the select group for a specified B.A. institution.

The reason for this was the SDR, unlike the DRF, consists of a "sample" of U.S. doctorates, and as such each SDR respondent has been assigned a sampling weight. The weights were designed to inflate the sample to the SDR population, rather than the DRF population. For example, in tracing the employment status of five Ph.D.s who earned their B.A. from university "X", it is highly probable that only one would be in the SDR sample. This one individual could conceivably carry a sampling weight greater than five. If this one individual was working in S/E in 1985, the analysis would indicate that more than 5 (or more than 100 percent) of the B.A. graduates from university "X" were working in S/E, which is not possible. (See appendix E for more information on the 1985 SDR survey procedures and weighting scheme).

Therefore, to minimize error associated with sampling and to answer the question of field of employment and primary work activity of these B.A. to Ph.D. recipients, the analysis was done by grouping Ph.D. recipients by type of B.A. institution (i.e., top 100

000140

baccalaureate sources of S/E Ph.D.s, technical institutions, liberal arts colleges, predominately women's colleges, and traditionally black colleges).

As shown in table 7, B.A. recipients from women's colleges were more likely to leave the S/E fields for employment in nonscience/nonengineering fields after receipt of their Ph.D.s than were graduates from other types of undergraduate institutions. In fact, Ph.D. recipients from other types of B.A. institutions had an estimated 90 percent retention rate in science and engineering employment fields.

Not surprisingly, baccalaureate graduates from technical institutions were more likely than graduates from other types of undergraduate institutions to pursue research careers after completing their Ph.D. degrees. Very few Ph.D.s from women's and black undergraduate institutions selected research careers.

Obviously the colleges that were selected by baccalaureates for their Ph.D. study had considerable influence on the graduates' decisions to remain in S/E and/or pursue research careers. Tables 8A to 8E present information on the most frequently selected Ph.D. institutions for baccalaureate graduates who went on for Ph.D.s in science/engineering fields. These tables, which are presented separately for various types of undergraduate institutions, include a Carnegie classification code assigned to the Ph.D. institution and an indication of whether the school was public or private. With only one exception, the Ph.D. institutions that were selected by these graduates were Type I (Research) institutions.

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TABLE 7

PERCENTAGES* OF S/E PHDS WHO EARNED BACCALAUREATE DEGREES FROM SELECTED TYPES OF BA INSTITUTIONS AND WERE EMPLOYED IN S/E OR IN RESEARCH IN 1985

TYPE OF BA INSTITUTION	EMPLOYED IN S/E %	EMPLOYED IN RESEARCH %
TOP 100 INSTITUTIONS	89.7	31.9
TECHNICAL COLLEGES	89.3	32.8
LIBERAL ARTS COLLEGES	89.5	30.3
WOMEN'S COLLEGES	81.5	17.1
BLACK COLLEGES	88.5	13.9

*NOTE: PERCENTAGES ARE BASED ON COUNTS FROM THE SIX SELECTED BENCHMARK YEARS.

000142

TABLE 8A

PHD INSTITUTIONS MOST FREQUENTLY SELECTED BY BA GRADUATES
FROM THE TOP 100 UNDERGRADUATE SOURCES OF S/E PHDS

INSTITUTION	BA TO PHD NUMBERS*	CARNEGIE CODE	TYPE
CALIF, U-BERKELEY	1197	I	PUBLIC
MASS INST TECHNOLOGY	883	I	PRIVATE
HARVARD UNIV/MA	859	I	PRIVATE
STANFORD UNIV/CA	700	I	PRIVATE
CALIF,U-LOS ANGELES	698	I	PUBLIC
COLUMBIA UNIV/NY	617	I	PRIVATE
CORNELL UNIV/NY	593	I	PRIVATE
CHICAGO, UNIV OF/IL	560	I	PRIVATE
YALE UNIVERSITY/CT	484	I	PRIVATE
WISCONSIN,U-MADISON	458	I	PUBLIC
ILL, U, URBANA-CHAMP	430	I	PUBLIC
MICHIGAN, UNIV OF	423	I	PUBLIC
PRINCETON UNIV/NJ	363	I	PRIVATE
NEW YORK UNIVERSITY	354	I	PRIVATE
PENNSYLVANIA, U OF	299	I	PRIVATE
JOHNS HOPKINS U/MD	285	I	PRIVATE
CAL INST TECHNOLOGY	284	I	PRIVATE
IOWA STATE UNIV	282	I	PUBLIC
WASHINGTON, U OF	274	I	PUBLIC
CALIF, U-DAVIS	270	I	PUBLIC

*NOTE: COUNTS ARE BASED ON BA TO PHD NUMBERS FROM THE 6 REFERENCED BENCHMARK YEARS

000143

TABLE 8B

PHD INSTITUTIONS MOST FREQUENTLY SELECTED BY BA GRADUATES FROM TECHNICAL COLLEGES

INSTITUTION	BA TO PHD NUMBERS*	CARNEGIE CODE	TYPE
MASS INST TECHNOLOGY	471	I	PRIVATE
CASE WESTRN RSRVE/OH	162	I	PRIVATE
STANFORD UNIV/CA	136	I	PRIVATE
CARNEGIE-MELLON U/PA	133	I	PRIVATE
CALIF, U-BERKELEY	131	I	PUBLIC
HARVARD UNIV/MA	114	I	PRIVATE
CAL INST TECHNOLOGY	112	I	PRIVATE
RENSSELAER POLY I/NY	107	I	PRIVATE
ILL, U, URBANA-CHAMP	94	I	PUBLIC
POLYTECHNIC UNIV/NY	82	I	PRIVATE
PRINCETON UNIV/NJ	82	I	PRIVATE
CORNELL UNIV/NY	79	I	PRIVATE
CALIF,U-LOS ANGELES	72	I	PUBLIC
ILLINOIS INST TECH	64	I	PRIVATE
COLUMBIA UNIV/NY	61	I	PRIVATE
MICHIGAN, UNIV OF	59	I	PUBLIC
WISCONSIN,U-MADISON	59	I	PUBLIC
OHIO STATE UNIV	58	I	PUBLIC
PENNSYLVANIA, U OF	54	I	PRIVATE
MARYLAND, UNIV OF	48	I	PUBLIC

*NOTE: COUNTS ARE BASED ON BA TO PHD NUMBERS FROM THE 6 REFERENCED BENCHMARK YEARS

00v144

TABLE 8C

PHD INSTITUTIONS MOST FREQUENTLY SELECTED BY BA GRADUATES FROM LIBERAL ARTS COLLEGES

INSTITUTION	BA TO PHD NUMBERS*	CARNEGIE CODE	TYPE
HARVARD UNIV/MA	208	I	PRIVATE
MICHIGAN, UNIV OF	189	I	PUBLIC
WISCONSIN,U-MADISON	156	I	PUBLIC
YALE UNIVERSITY/CT	142	I	PRIVATE
CORNELL UNIV/NY	142	I	PRIVATE
ILL, U, URBANA-CHAMP	138	I	PUBLIC
CALIF, U-BERKELEY	130	I	PUBLIC
CHICAGO, UNIV OF/IL	125	I	PRIVATE
STANFORD UNIV/CA	125	I	PRIVATE
COLUMBIA UNIV/NY	120	I	PRIVATE
MASS INST TECHNOLOGY	116	I	PRIVATE
WASHINGTON, U OF	108	I	PUBLIC
PRINCETON UNIV/NJ	96	I	PRIVATE
MINNESOTA,U-MINNEAPL	96	I	PUBLIC
OHIO STATE UNIV	87	I	PUBLIC
PENNSYLVANIA, U OF	83	I	PRIVATE
PURDUE UNIVERSITY/IN	81	I	PUBLIC
NC, U OF-CHAPEL HILL	81	I	PUBLIC
NORTHWESTERN UNIV/IL	79	I	PRIVATE
ROCHESTER,UNIV OF/NY	77	I	PRIVATE

*NOTE: COUNTS ARE BASED ON BA TO PHD NUMBERS FROM THE 6 REFERENCED BENCHMARK YEARS

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TABLE 8D

PHD INSTITUTIONS MOST FREQUENTLY SELECTED BY BA GRADUATES
FROM PREDOMINATELY WOMEN'S COLLEGES

INSTITUTION	BA TO PHD NUMBERS*	CARNEGIE CODE	TYPE
HARVARD UNIV/MA	67	I	PRIVATE
COLUMBIA UNIV/NY	54	I	PRIVATE
YALE UNIVERSITY/CT	35	I	PRIVATE
BOSTON UNIVERSITY/MA	34	1	PRIVATE
NEW YORK UNIVERSITY	32	I	PRIVATE
MICHIGAN, UNIV OF	30	I	PUBLIC
PENNSYLVANIA, U OF	29	I	PRIVATE
CORNELL UNIV/NY	25	I	PRIVATE
WISCONSIN,U-MADISON	24	I	PUBLIC
NC, U OF-CHAPEL HILL	24	I	PUBLIC
CHICAGO, UNIV OF/IL	23	I	PRIVATE
MASS INST TECHNOLOGY	22	I	PRIVATE
RUTGERS UNIV/NJ	22	I	PUBLIC
JOHNS HOPKINS U/MD	22	I	PRIVATE
MARYLAND, UNIV OF	22	I	PUBLIC
ROCHESTER,UNIV OF/NY	21	I	PRIVATE
CALIF, U-BERKELEY	21	I	PUBLIC
PITTSBURGH, UNIV OF	20	I	PUBLIC
CASE WESTRN RSRVE/OH	20	I	PRIVATE
TEXAS, U-AUSTIN	20	I	PUBLIC

NOTE: COUNTS ARE BASED ON BA TO PHD NUMBERS FROM THE 6 REFFRENCED BENCHMARK YEARS

000147

TABLE 8E

PHD INSTITUTIONS MOST FREQUENTLY SELECTED BY BA GRADUATES FROM TRADITIONALLY BLACK COLLEGES

INSTITUTION	BA TO PHD NUMBERS*	CARNEGIE CODE	TYPE
HOWARD UNIVERSITY/DC	57	I	PRIVATE
ILL, U, URBANA-CHAMP	20	I	PUBLIC
OHIO STATE UNIV	19	I	PUBLIC
MICHIGAN STATE UNIV	16	I	PUBLIC
PITTSBURGH, UNIV OF	13	I	PUBLIC
PURDUE UNIVERSITY/IN	13	I	PUBLIC
MARYLAND, UNIV OF	13	I	PUBLIC
ATLANTA UNIV/GA	13	III	PRIVATE
MICHIGAN, UNIV OF	11	I	PUBLIC
IOWA STATE UNIV	11	I	PUBLIC
RUTGERS UNIV/NJ	10	I	PUBLIC
NC, U OF-CHAPEL HILL	9	I	PUBLIC
CORNELL UNIV/NY	8	I	PRIVATE
NEW YORK UNIVERSITY	8	I	PRIVATE
WAYNE STATE UNIV/MI	8	I	PUBLIC
NC STATE U-RALEIGH	8	I	PUBLIC
TENN, U-KNOXVILLE	8	I	PUBLIC
CALIF,U-LOS ANGELES	8	I	PUBLIC
PENN STATE UNIV	7	I	PUBLIC
CATHOLIC U AMER/DC	7	I	PRIVATE

*NOTE: COUNTS ARE BASED ON BA TO PHD NUMBERS FROM THE 6 REFERENCED BENCHMARK YEARS

00048

VII. DEMOGRAPHIC CHARACTERISTICS OF GRADUATES FROM THE LEADING 50 UNDERGRADUATE SOURCES OF S/E PH.D.S

Gender and Field of Ph.D.

Table 9 provides data on the field and gender distribution of those Ph.D.s who earned baccalaureate degrees from the leading undergraduate sources of S/E Ph.D.s. The percentages were calculated on the basis of all baccalaureates who graduated from the specified undergraduate institution and then went on to earn a Ph.D. degree in S/E. Therefore, the percentages for men may be compared across fields, but should not be compared to the percentages for women since the B.A. to Ph.D. counts for men far exceeds the counts for women for all institutions except the women's colleges.

As one might have hypothesized, the majority of the male Ph.D.s were in the EMP fields. Between 92 and 100 percent of the male baccalaureate graduates from the technical institutions such as Webb Institute of Naval Architecture (NY), Polytechnic University (NY), and Worchester Polytechnical Institute (MA), selected the EMP fields for their Ph.D. specialities.

There were, however, a few undergraduate institutions where men were not drawn to the EMP fields. For example, approximately 77 percent of the men graduating from the Philadelphia College of Pharmacy and Sciences (PA) earned their Ph.D.s in the life sciences. Approximately 56 percent and 47 percent respectively, of the men graduating from St. John College (MD) and Wesleyan University (CT) focused their Ph.D. studies in the social sciences.

In general, women were more likely to select the social sciences fields for Ph.D. study than either the EMP fields or the life sciences. This is especially striking for those undergraduate institutions that were totally female, such as Radcliffe and Bryn Mawr colleges, where more than half of the baccalaureate graduates who went on for S/E Ph.D.s selected the social sciences for their Ph.D. field of study.

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TABLE 9

FIELD OF PHD AND GENDER OF BACCALAUREATES FROM THE TOP 50 UNDERGRADUATE SOURCES OF SCIENCE/ENGINEERING PHDS

INSTITUTION	TOTAL PRODUCTIVITY RATIO*	EMP		LIFE SCIENCES		SOCIAL SCIENCES	
		%M	%W	%M	%W	%M	%W
CAL INST TECHNOLOGY	44.3	83.2	.8	8.5	1.5	5.9	
HARVEY MUDD COLL/CA	30.6	83.8	4.4	5.9	1.5	4.4	
MASS INST TECHNOLOGY	21.3	84.4	1.7	7.0	1.3	5.6	.1
REED COLLEGE/OR	20.7	36.6	3.5	16.9	2.9	26.2	14.0
SWARTHMORE COLL/PA	17.1	30.7	2.6	17.1	7.0	23.2	19.3
COOPER UNION/NY	13.7	89.7	3.2	6.3		.8	
CHICAGO, UNIV OF/IL	13.5	33.4	3.8	17.7	6.0	29.0	10.1
RADCLIFFE C/MA	13.4		17.5		25.8		56.7
RICE UNIVERSITY/TX	12.0	70.8	4.2	10.1	3.5	7.6	3.8
HAVERFORD COLL/PA	11.7	34.9		31.4		33.7	
NEW COLL-SOUTH FLA U	11.6	23.3	6.7	10.0	6.7	26.7	26.7
CARLETON COLLEGE/MN	11.0	32.3	9.3	19.3	8.1	19.3	11.8
POMONA COLLEGE/CA	10.2	39.1	1.2	21.7	8.1	21.7	8.1
GRINNELL COLLEGE/IA	9.9	25.2	.8	18.5	10.1	35.3	10.1
OBERLIN COLLEGE/OH	9.7	29.8	3.1	14.7	4.8	32.5	15.1
CALIF, U-SAN DIEGO	9.4	39.4	3.1	34.6	7.1	7.9	7.9
ANTIOCH COLLEGE/OH	9.4	27.6	1.9	11.5	6.4	35.3	17.3
CORNELL UNIV/NY	9.3	40.2	1.9	28.7	9.2	11.7	8.3
N MEX I MINING&TECH	9.2	75.8	3.0	6.1	12.1		3.0
PRINCETON UNIV/NJ	9.0	58.3	.7	12.7	1.0	23.7	3.7

*NOTE: DATA IS BASED ON COUNTS FROM THE SIX BENCHMARK YEARS.

60-50

TABLE 9

FIELD OF PHD AND GENDER OF BACCALAUREATES FROM THE TOP 50 UNDERGRADUATE SOURCES OF SCIENCE/ENGINEERING PHDS

INSTITUTION	TOTAL PRODUCTIVITY RATIO*	EMP %M	EMP %W	LIFE SCIENCES %M	LIFE SCIENCES %W	SOCIAL SCIENCES %M	SOCIAL SCIENCES %W
WESLEYAN UNIV/CT	8.9	31.6	1.5	16.5	.8	46.6	3.0
WABASH COLLEGE/IN	8.9	43.8		34.2		21.9	
AMHERST COLLEGE/MA	8.6	38.5		19.6		42.0	
EARLHAM COLLEGE/IN	8.5	38.9	2.8	29.2	8.3	16.7	4.2
HAMPSHIRE COLL/MA	8.4	15.0		15.0	20.0	25.0	25.0
CALIF, U-BERKELEY	8.3	42.1	2.2	21.7	4.5	20.7	8.9
RENSSELAER POLY I/NY	8.2	81.8	1.1	10.3	.8	6.0	
POLYTECHNIC UNIV/NY	8.1	93.8	1.4	2.4	.5	1.9	
BRYN MAWR COLL/PA	7.9		22.7		21.3		56.0
CALIF,U-RIVERSIDE	7.9	36.5	1.6	22.2	7.4	24.3	7.9
JOHNS HOPKINS U/MD	7.9	48.2	.7	25.7	2.9	21.4	1.1
BRANDEIS UNIV/MA	7.9	20.3	1.4	19.6	6.1	33.1	19.6
HARVARD UNIV/MA	7.5	39.7	.5	19.0	.3	38.6	1.8
ST JOHNS COLLEGE/MD	7.2	5.6	5.6	16.7	5.6	55.6	11.1
FRNKLN&MARSHAL C/PA	7.2	46.3	.7	20.1	1.5	30.6	.7
WOOSTER, COLL OF/OH	7.0	42.0	4.2	16.0	5.0	24.4	8.4
KALAMAZOO COLLEGE/MI	7.0	41.5	1.5	26.2	6.2	18.5	6.2
YALE UNIVERSITY/CT	6.9	45.7	.9	14.7	1.9	33.8	3.0
CARNEGIE-MELLON U/PA	6.8	81.6	2.9	5.1	1.8	5.8	2.9
CALIF,U-SANTA CRUZ	6.7	23.6	4.5	20.9	9.1	28.2	13.6

*NOTE: DATA IS BASED ON COUNTS FROM THE SIX BENCHMARK YEARS.

00151

TABLE 9

FIELD OF PHD AND GENDER OF BACCALAUREATES FROM THE TOP 50 UNDERGRADUATE SOURCES OF SCIENCE/ENGINEERING PHDS

INSTITUTION	TOTAL PRODUCTIVITY RATIO*	EMP		LIFE SCIENCES		SOCIAL SCIENCES	
		%M	%W	%M	%W	%M	%W
WILLIAMS COLLEGE/MA	6.5	38.9	.9	19.5	.9	36.3	3.5
BROWN UNIVERSITY/RI	6.5	46.1	1.9	12.8	6.9	20.6	11.8
ROCHESTER,UNIV OF/NY	6.5	42.2	2.5	13.8	8.1	21.3	12.2
WEBB I NAVAL ARCH/NY	6.4	100.0					
PHILA C PHARM&SCI/PA	6.4	21.2		76.9	1.9		
SUNY AT STONY BROOK	6.3	34.0	4.2	18.3	6.3	24.6	12.6
STANFORD UNIV/CA	6.3	39.8	2.9	15.7	6.8	22.7	12.1
WORCESTER POLY I/MA	6.3	92.5		7.5			
CASE WESTRN RSRVE/OH	6.2	64.2	2.0	11.8	4.5	13.3	4.3
BOWDOIN COLLEGE/ME	6.2	48.1	1.3	24.7		26.0	

*NOTE: DATA IS BASED ON COUNTS FROM THE SIX BENCHMARK YEARS.

00052

Race-Ethnic and Field of Ph.D.

Data on race-ethnic was not available for many of the Ph.D.s who had graduated from the leading 50 undergraduate institutions because of one of two reasons: 1) the race-ethnic question did not appear on the DRF questionnaire until 1973, or 2) the Ph.D. recipient selected not to answer the question. However, race data on some of these Ph.D.s were secured from the Survey of Doctorate Recipients files through its longitudinal sample surveys.

With this cautionary statement in mind, the reader will note that Asians were more highly represented in the EMP doctoral fields, and least likely represented in the social sciences. Blacks and other minorities were more highly represented in the social sciences Ph.D. fields (table 10).

There did not appear to be a relationship between the type of undergraduate institution from which the baccalaureate graduated and the distribution of minorities in the doctoral programs. However, the geographic location of the undergraduate institution (i.e., West coast, East coast) did appear to be related to the number of Asians coming out of the baccalaureate programs and continuing on for doctoral studies.

00v153

TABLE 10

FIELD OF PHD AND RACE/ETHNIC CLASSIFICATION* OF BACCALAUREATES FROM THE TOP 50 UNDERGRADUATE SOURCES OF SCIENCE/ENGINEERING PHDS

INSTITUTION	TOTAL PROD RATIO**	EMP %W	EMP %A	EMP %O	LIFE SCIENCES %W	LIFE SCIENCES %A	LIFE SCIENCES %O	SOCIAL SCIENCES %W	SOCIAL SCIENCES %A	SOCIAL SCIENCES %O
CAL INST TECHNOLOGY	44.3	29.4	2.3	.8	5.7	.3		2.8		
HARVEY MUDD COLL/CA	30.6	55.9	2.9	4.4	4.4			4.4		
MASS INST TECHNOLOGY	21.3	22.8	2.5	.9	4.3	.4	.2	3.1	.1	
REED COLLEGE/OR	20.7	12.8	.6		8.1			18.6	.6	1.7
SWARTHMORE COLL/PA	17.1	7.5	.4	.4	7.9	.9	.4	21.9		.4
COOPER UNION/NY	13.7	23.0	1.6		2.4	.8		.8		
CHICAGO, UNIV OF/IL	13.5	10.9	.4	.2	8.2	.2	.2	12.7	.2	.2
RADCLIFFE C/MA	13.4	5.2			12.4	1.0		29.9	2.1	2.1
RICE UNIVERSITY/TX	12.0	31.3		.3	5.9	.3	.7	6.3		.3
HAVERFORD COLL/PA	11.7	11.6			17.4			12.8		1.2
NEW COLL-SOUTH FLA U	11.6	26.7	3.3		10.0			50.0		3.3
CARLETON COLLEGE/MN	11.0	18.6	.6		13.7	.6		16.8		
POMONA COLLEGE/CA	10.2	14.3	.6		14.3	1.2	.6	16.8	1.2	
GRINNELL COLLEGE/IA	9.9	6.7		.8	12.6			18.5	.8	1.7
OBERLIN COLLEGE/OH	9.7	8.6	.3		7.2			24.3		.7
CALIF, U-SAN DIEGO	9.4	37.0	.8	.8	36.2	3.1	1.6	14.2	.8	
ANTIOCH COLLEGE/OH	9.4	12.2			8.3		.6	18.6	1.3	.6
CORNELL UNIV/NY	9.3	15.0	1.1	.3	17.2	.3	.6	9.9	.1	.6
N MEX I MINING&TECH	9.2	33.3			6.1		3.0	3.0		
PRINCETON UNIV/NJ	9.0	18.8	.5		4.9		.5	13.4	.7	1.0

* W=WHITE A=ASIAN O=BLACK,OTHER
** NOTE: DATA IS BASED ON COUNTS FROM THE SIX BENCHMARK YEARS.

000154

TABLE 10

FIELD OF PHD AND RACE/ETHNIC CLASSIFICATION* OF BACCALAUREATES FROM THE TOP 50 UNDERGRADUATE SOURCES OF SCIENCE/ENGINEERING PHDS

INSTITUTION	TOTAL PROD RATIO**	EMP %W	EMP %A	EMP %O	LIFE SCIENCES %W	LIFE SCIENCES %A	LIFE SCIENCES %O	SOCIAL SCIENCES %W	SOCIAL SCIENCES %A	SOCIAL SCIENCES %O
WESLEYAN UNIV/CT	8.9	7.5	.8		9.8		.8	18.8		1.5
WABASH COLLEGE/IN	8.9	13.7	1.4		11.0	1.4		8.2		
AMHERST COLLEGE/MA	8.6	14.7			7.0		1.4	16.8	.7	
EARLHAM COLLEGE/IN	8.5	16.7			20.8			6.9		1.4
HAMPSHIRE COLL/MA	8.4	15.0			35.0			50.0		
CALIF, U-BERKELEY	8.3	11.5	3.1	.3	10.6	1.8	.4	14.3	.9	1.5
RENSSELAER POLY I/NY	8.2	29.3	1.4	.3	7.6			3.0		.3
POLYTECHNIC UNIV/NY	8.1	23.3	2.4	1.0	1.9			1.4		
BRYN MAWR COLL/PA	7.9	10.7	1.3		5.3	2.7		26.7		
CALIF,U-RIVERSIDE	7.9	17.5			19.6	.5	.5	20.1		1.6
JOHNS HOPKINS U/MD	7.9	14.1		.4	12.0	1.1		12.3	.7	.7
BRANDEIS UNIV/MA	7.9	8.8	.7		18.2		.7	33.8		1.4
HARVARD UNIV/MA	7.5	11.9	.4		7.8	.1	.1	16.2	.5	.7
ST JOHNS COLLEGE/MD	7.2	5.6			11.1			22.2		
FRNKLN&MARSHAL C/PA	7.2	18.7			9.7			15.7	.7	
WOOSTER, COLL OF/OH	7.0	16.8		.8	8.4			15.1		
KALAMAZOO COLLEGE/MI	7.0	15.4		1.5	16.9			15.4		
YALE UNIVERSITY/CT	6.9	11.9	1.3	.4	8.3	.9		15.7	.4	1.1
CARNEGIE-MELLON U/PA	6.8	23.8	1.1		4.3		.7	5.1	.4	
CALIF,U-SANTA CRUZ	6.7	28.2			26.4	.9		38.2	.9	1.8

* W=WHITE A=ASIAN O=BLACK,OTHER

** NOTE: DATA IS BASED ON COUNTS FROM THE SIX BENCHMARK YEARS.

00055

TABLE 10

FIELD OF PHD AND RACE/ETHNIC CLASSIFICATION* OF BACCALAUREATES FROM THE TOP 50 UNDERGRADUATE SOURCES OF SCIENCE/ENGINEERING PHDS

INSTITUTION	TOTAL PROD RATIO**	EMP %W	EMP %A	EMP %O	LIFE SCIENCES %W	LIFE SCIENCES %A	LIFE SCIENCES %O	SOCIAL SCIENCES %W	SOCIAL SCIENCES %A	SOCIAL SCIENCES %O
WILLIAMS CCLLEGE/MA	6.5	11.5			11.5	.9		22.1		
BROWN UNIVERSITY/RI	6.5	23.1	.3	.6	10.9		.3	20.2		.9
ROCHESTER,UNIV OF/NY	6.5	14.4	.9	.3	13.8	.3		18.4	.3	.9
WEBB I NAVAL ARCH/NY	6.4	33.3								
PHILA C PHARM&SCI/PA	6.4	5.8			21.2					
SUNY AT STONY BROOK	6.3	26.2	2.1		20.9	1.0	1.0	32.5		.5
STANFORD UNIV/CA	6.3	12.9	.7	.5	11.3	2.0	.2	19.1	.4	.7
WORCESTER POLY I/MA	6.3	43.0	2.2	1.1	3.2					
CASE WESTRN RSRVE/OH	6.2	21.6		.3	7.0	.5		9.5	.3	.3
BOWDOIN COLLEGE/ME	6.2	18.2			13.0			9.1	1.3	

* W-WHITE A-ASIAN O-BLACK,OTHER
** NOTE: DATA IS BASED ON COUNTS FROM THE SIX BENCHMARK YEARS.

000156

VIII. SUMMARY

Obviously, the impact that an undergraduate institution has on the academic and career decisions of its graduates may be measured in a variety of ways, with the B.A. to Ph.D. institutional productivity being only one such measure. However, given the fact that institutional productivity was the focus of this study, there are a number of conclusions one may draw from the analyses presented in the preceding text.

Approximately four out of every five of the leading 100 baccalaureate sources of S/E Ph.D.s were private colleges/universities. Technical institutions and liberal arts colleges were most successful in producing large percentages of their graduates that went on to obtain science/engineering Ph.D.s, and subsequently pursued research careers. Traditionally black colleges and predominately women's colleges, however, were far less likely to produce graduates who pursued science/engineering doctoral degrees. No black colleges and only three women's colleges (Bryn Mawr, Radcliffe, and Wellesley) were in the leading 100 B.A. to Ph.D. undergraduate sources of S/E Ph.D.s.

Although it is difficult to give definitive reasons for why some types of undergraduate institutions have higher productivity ratios than others, one may conclude that students enrolling in technical institutions and liberal arts research colleges do so because of their pre-college interests in the sciences. Therefore, the heavy emphasis that is placed on the sciences in the undergraduate curriculum, combined with the students' pre-college interests in science/engineering, most assuredly plays a large role in the decisions made by these students when leaving their undergraduate institutions.

The decision to pursue doctoral training is not only related to the student's interest, but also to the student's financial situation and the number of academic and employment opportunities that are available to the student when such a decision is made. The influences of these external factors are alluded to in the time-series data presented in this report.

000157

Following World War II, heavy emphasis was placed on the value of education, both by the business world and parents who wanted to assure that their children had opportunities that were denied them during a time when the economy of the country was not as healthy. During the early 1950s, a great deal of emphasis was placed on the need for the United States to close the technical gap that existed between the United States and the Soviet Union. This emphasis on the sciences was followed by increased attention to the space program. The productivity trends from 1955 to 1965 clearly demonstrate the impact of these science-focused programs. The productivity ratios of virtually all types of baccalaureate institutions increased between 1955 to 1965, and most drastically for the technical schools and the liberal arts colleges. With the increased involvement of the country in the Vietnam conflict in the mid-to-late 1960s and a decrease in emphasis on the sciences, the productivity ratios of the technical schools and the liberal arts colleges declined sharply and steadily from 1965 to 1975.

Just as the decisions made by high school students to enter one type of college as opposed to another is determined by a number of factors, the decisions to major in specific doctoral fields are also influenced by the student's pre-college interests, baccalaureate experiences, perceptions of employment opportunities, etc.

For the top 100 undergraduate sources of science/engineering Ph.D.s, large percentages of the students selected the EMP fields for doctoral study. This was especially true for the graduates of technical institutions and the liberal arts research colleges, where the EMP fields were emphasized. Graduates from women's colleges, on the other hand, were more likely to focus their doctoral studies in the social sciences and the life sciences. This finding supports the hypothesis that women are less likely than men to major in "hard" sciences.

Analyses of the top 50 undergraduate sources of S/E Ph.D.s indicate that minorities, other than Asians, were more likely to select the social sciences for Ph.D. study; whereas, Asians tended to gravitate more frequently to the EMP fields.

000158

The post-doctoral career decisions made by Ph.D. graduates are probably more influenced by their experiences at their Ph.D. institutions than by their undergraduate institutions. However, this study did note that those female students that earned their B.A. from women's colleges were less likely than graduates of other types of undergraduate institutions to remain in S/E employment fields following receipt of a S/E Ph.D. degree. Furthermore, these women, as well as graduates from traditionally black colleges, were less likely than B.A. graduates from technical colleges and liberal arts research colleges to pursue research careers. Again, this finding supports the view that the emphasis placed on EMP fields and research by technical institutions and liberal arts research colleges has far reaching and on-going implications for the academic and career decisions made by its graduates.

Possible Future Studies

As is true with most analytical studies, this study addressed a number of questions, but also raises a number of questions that could be addressed in future studies.

Given the fact that the productivity ratios of undergraduate institutions over time have already been identified, it would be useful to select institutions with changing productivity ratios to try to relate the changes to a number of external variables such as federal funding, emphasis of the job market, the economy of the country, the curriculum of the undergraduate institutions, etc.

This follow-on study could be done on a year by year basis for those institutions where changes in productivity were rather drastic. The institutions could be surveyed to determine whether any changes occurred within the institution itself that may have contributed to the increase or decrease in productivity of the B.A. to Ph.D. pipeline. The relationship between the high production institutions and those institutions that have traditionally been recipients of NSF and NIH fellowships and associateships could also be reviewed as part of this analysis.

000.59

Secondly, in view of the fact that the employment patterns of the B.A. to Ph.D. recipients from various undergraduate institutions were not fully explored in the study, a follow-on study to analyze this topic is suggested.

Using the SDR, rather than the DRF, as the data base, an employment study of B.A. graduates from highly productive technical schools, liberal arts colleges, and women's colleges would be extremely interesting in shedding light on career paths taken by these graduates. Starting with the SDR as the data base would avoid the weighting problems encountered in the analysis of the data in this report.

The proposed study would relate the findings of this report to the primary work activities, salaries, fields of employment, type of employers, field switchings, publication records, etc. of the Ph.D. graduates from various types of undergraduate institutions, and would provide a more comprehensive understanding of the impact of the undergraduate institution on the productivity of its graduates.

09-00

APPENDIX A

B.A. to Ph.D. Output Rankings by Baccalaureate Institutions
(Not Adjusted for Institution Size)

Note: Undergraduate institutions graduating 30 or less baccalaureates who went on to earn a science/engineering Ph.D. during 1950 to 1979 were not included in Appendix A.

00v.61

APPENDIX A

NUMBER OF BACCALAUREATES WHO EARNED S/E PHDS BY BA INSTITUTION & YEAR OF BACCALAUREATE

INSTITUTION NAME	TOTAL N	TOTAL RANK	1950-54 N	1950-54 RANK	1955-59 N	1955-59 RANK	1960-64 N	1960-64 RANK	1965-69 N	1965-69 RANK	1970-74 N	1970-74 RANK	1975-79 N	1975-79 RANK
CALIF, U-BERKELEY	6852	1	926	1	847	1	1307	2	1732	1	1288	1	752	1
MASS INST TECHNOLOGY	5702	2	617	4	811	2	1342	1	1180	3	1008	3	744	2
ILL, U, URBANA-CHAMP	5599	3	719	3	791	3	1061	4	1247	2	1124	2	657	4
MICHIGAN, UNIV OF	4885	4	556	7	636	6	1060	5	1127	4	929	4	577	5
CORNELL UNIV/NY	4748	5	561	6	649	5	858	6	1071	5	924	5	685	3
WISCONSIN,U-MADISON	4256	6	569	5	555	8	838	7	945	8	886	6	463	10
CUNY-CITY COLLEGE	4119	7	741	2	773	4	1129	3	898	9	460	22	118	89
CALIF,U-LOS ANGELES	4025	8	442	14	534	9	776	10	1014	6	758	9	501	6
TEXAS, U-AUSTIN	3784	9	289	21	436	15	813	9	962	7	827	7	457	11
HARVARD UNIV/MA	3602	10	489	8	517	11	817	8	757	10	549	16	473	8
MINNESOTA,U-MINNEAPL	3590	11	482	9	564	7	767	11	752	12	599	14	426	12
PENN STATE UNIV	3581	12	417	15	483	14	757	13	756	11	674	10	494	7
PURDUE UNIVERSITY/IN	3308	13	409	16	504	13	676	14	650	18	663	11	406	14
COLUMBIA UNIV/NY	3262	14	447	13	510	12	764	12	739	15	526	20	276	29
RUTGERS UNIV/NJ	3041	15	381	17	318	22	502	20	743	13	626	12	471	9
MICHIGAN STATE UNIV	3038	16	298	20	331	21	480	23	741	14	782	8	406	15
OHIO STATE UNIV	2976	17	368	18	397	16	598	16	698	16	605	13	310	23
CUNY-BROOKLYN COLL	2797	18	480	10	523	10	616	15	639	19	408	26	131	78
STANFORD UNIV/CA	2737	19	282	22	348	19	564	18	656	17	543	18	344	17
WASHINGTON, U OF	2575	20	281	23	315	23	496	21	622	20	551	15	310	24
IOWA STATE UNIV	2435	21	324	19	359	17	590	17	531	21	376	34	255	35
MISSOURI,U-COLUMBIA	2341	22	260	25	356	18	493	22	510	22	458	23	264	30
CHICAGO, UNIV OF/IL	2137	23	478	11	301	25	385	30	418	31	341	40	214	47
YALE UNIVERSITY/CT	2136	24	279	24	308	24	460	25	479	39	388	30	322	20
NEW YORK UNIVERSITY	2106	25	466	12	332	20	399	28	415	32	366	36	128	80
MARYLAND, UNIV OF	2101	26	196	35	220	41	355	35	434	24	543	17	323	18
RENSSELAER POLY I/NY	2017	27	204	33	287	27	502	19	445	26	339	41	240	39
PRINCETON UNIV/NJ	1992	28	217	30	279	28	387	29	418	30	346	39	345	16
PENNSYLVANIA, U OF	1937	29	218	29	237	33	342	39	403	34	436	24	301	27
FLORIDA, UNIV OF	1934	30	170	46	224	38	453	26	452	25	374	35	261	32
COLORADO,U-BOULDER	1917	31	200	34	232	34	382	32	444	27	406	27	253	36
CAL INST TECHNOLOGY	1888	32	210	32	267	30	434	27	355	45	337	43	285	28
CASE WESTRN RSRVE/OH	1805	33	212	31	230	36	462	24	402	35	360	37	139	74
UTAH, UNIV OF	1764	34	253	26	288	26	383	31	423	29	273	60	144	70
CALIF, U-DAVIS	1732	35	68	126	96	114	195	87	425	28	522	21	426	13
BRIGHAM YOUNG U/UT	1713	36	164	49	231	35	334	41	400	36	322	45	262	31
NORTHWESTERN UNIV/IL	1689	37	245	28	220	40	352	36	356	43	316	46	200	51
BROWN UNIVERSITY/RI	1661	38	163	50	144	70	289	48	355	44	398	29	312	21
KANSAS, UNIV OF	1633	39	188	37	211	44	370	33	366	42	314	47	184	53
INDIANA U BLOOMNGTON	1621	40	132	66	155	60	260	57	404	33	428	25	242	37

SOURCE: NATIONAL RESEARCH COUNCIL'S SURVEY OF EARNED DOCTORATES

00v.62

APPENDIX A

NUMBER OF BACCALAUREATES WHO EARNED S/E PHDS BY BA INSTITUTION & YEAR OF BACCALAUREATE

INSTITUTION NAME	TOTAL N	TOTAL RANK	1950-54 N	1950-54 RANK	1955-59 N	1955-59 RANK	1960-64 N	1960-64 RANK	1965-69 N	1965-69 RANK	1970-74 N	1970-74 RANK	1975-79 N	1975-79 RANK
TEXAS A&M UNIVERSITY	1586	41	179	41	240	32	316	42	332	50	294	51	225	43
CUNY-QUEENS COLL	1585	42	146	55	199	46	297	46	507	23	301	50	135	76
ROCHESTER,UNIV OF/NY	1580	43	146	56	144	71	278	51	372	40	380	32	260	34
LA ST UNIV & A&M C	1567	44	142	60	144	73	312	43	397	37	347	38	225	42
NOTRE DAME, U OF/IN	1523	45	133	64	219	42	343	38	371	41	289	53	168	58
OKLAHOMA STATE UNIV	1487	46	193	36	272	29	350	37	321	54	226	74	125	81
MASS, U OF-AMHERST	1482	47	171	45	128	80	223	72	325	51	331	44	304	26
SUNY AT BUFFALO	1465	48	115	77	105	98	200	85	354	46	379	33	312	22
CARNEGIE-MELLON U/PA	1445	49	173	43	220	39	361	34	348	47	219	77	124	82
OBERLIN COLLEGE/OH	1424	50	184	39	206	45	300	44	324	52	255	64	155	63
RICE UNIVERSITY/TX	1376	51	106	83	165	55	289	49	347	48	290	52	179	56
CONNECTICUT, UNIV OF	1369	52	183	40	192	47	225	71	266	75	278	57	225	41
NC STATE U-RALEIGH	1360	53	78	113	182	49	338	40	290	63	289	54	183	54
PITTSBURGH, UNIV OF	1342	54	143	59	147	67	263	55	322	53	303	48	164	59
COLORADO STATE UNIV	1334	55	145	58	166	53	254	60	321	55	267	61	181	55
JOHNS HOPKINS U/MD	1328	56	124	72	163	56	271	54	311	59	266	62	193	52
DUKE UNIVERSITY/NC	1325	57	110	82	157	59	216	79	279	67	339	42	224	44
NEBRASKA, U-LINCOLN	1307	58	178	42	226	37	252	61	301	60	226	73	124	84
NC, U OF-CHAPEL HILL	1290	59	130	67	114	87	221	73	316	56	302	49	207	49
WAYNE STATE UNIV/MI	1284	60	185	38	170	51	299	45	335	49	191	87	104	101
CALIF,U-SANTA BARB	1262	61	39	193	54	181	123	141	386	38	399	28	261	33
IOWA, UNIVERSITY OF	1254	62	162	52	165	54	249	64	281	66	256	63	141	73
OKLAHOMA, U OF	1247	63	166	48	255	31	297	47	250	82	179	92	100	105
TENN, U-KNOXVILLE	1222	64	105	86	145	69	254	59	312	58	251	68	155	64
OREGON STATE UNIV	1218	65	162	53	189	48	273	53	267	74	188	89	139	75
VA POLY INST&STATE U	1203	66	124	73	148	66	220	74	226	90	273	59	212	48
DARTMOUTH COLLEGE/NH	1201	67	118	76	150	63	284	50	294	61	211	81	144	69
KANSAS STATE UNIV	1201	68	167	47	214	43	259	58	259	79	187	90	115	91
SYRACUSE UNIV/NY	1189	69	248	27	145	68	245	65	234	88	217	80	100	104
ARIZONA, UNIV OF	1176	70	104	89	127	82	236	67	284	64	255	65	170	57
WASHINGTON UNIV/MO	1175	71	163	51	144	72	244	66	236	86	235	70	153	66
GEORGIA INST TECH	1165	72	105	85	182	50	274	52	316	57	176	97	112	93
CINCINNATI, U OF/OH	1150	73	112	81	138	74	235	68	260	78	252	67	153	65
BOSTON UNIVERSITY/MA	1101	74	132	65	113	89	190	88	238	85	287	55	141	71
SUNY AT STONY BROOK	1092	75					55	262	192	109	540	19	305	25
TEMPLE UNIVERSITY/PA	1067	76	155	54	128	81	186	92	272	70	232	71	94	110
GEORGIA, UNIV OF	1058	77	115	78	114	88	214	81	266	76	192	86	157	62
SWARTHMORE COLL/PA	1050	78	146	57	153	62	250	62	224	91	153	119	124	83
WASHINGTON STATE U	1033	79	138	63	160	57	210	83	235	87	178	94	112	95
SAN DIEGO STATE U/CA	1010	80	85	107	98	112	226	70	279	68	201	83	121	85

SOURCE: NATIONAL RESEARCH COUNCIL'S SURVEY OF EARNED DOCTORATES

00063

APPENDIX A

NUMBER OF BACCALAUREATES WHO EARNED S/E PHDS BY BA INSTITUTION & YEAR OF BACCALAUREATE

INSTITUTION NAME	TOTAL N	TOTAL RANK	1950-54 N	1950-54 RANK	1955-59 N	1955-59 RANK	1960-64 N	1960-64 RANK	1965-69 N	1965-69 RANK	1970-74 N	1970-74 RANK	1975-79 N	1975-79 RANK
FLORIDA STATE UNIV	1006	81	49	159	77	131	217	77	294	62	218	79	151	68
LEHIGH UNIVERSITY/PA	993	82	114	79	150	64	249	63	223	92	172	99	85	127
MIAMI UNIVERSITY/OH	981	83	97	92	107	96	167	105	258	80	220	76	132	77
DELAWARE, UNIV OF	976	84	58	141	71	138	148	119	214	99	253	66	232	40
UTAH STATE UNIV	966	85	173	44	154	61	229	69	207	103	129	141	74	143
SOUTHERN ILL UNIV	964	86	56	145	99	108	217	76	262	77	219	78	111	96
VIRGINIA, UNIV OF	963	87	87	100	66	149	142	122	198	107	229	72	241	38
TEXAS TECH UNIV	958	88	86	104	131	77	215	80	271	72	161	107	94	111
CALIF,U-RIVERSIDE	946	89			60	163	174	100	272	71	280	56	160	60
CUNY-HUNTER COLLEGE	934	90	119	74	113	90	216	78	267	73	165	105	54	183
TUFTS UNIVERSITY/MA	933	91	88	99	110	93	188	91	253	81	175	98	119	87
POLYTECHNIC UNIV/NY	931	92	128	68	168	52	260	56	215	98	112	155	48	209
WEST VIRGINIA UNIV	912	93	113	80	121	84	218	75	220	94	160	108	80	134
FORDHAM UNIV/NY	899	94	119	75	137	75	179	96	219	96	176	95	69	149
ILLINOIS INST TECH	891	95	141	61	158	58	212	82	180	117	134	137	66	157
AUBURN UNIVERSITY/AL	875	96	125	71	124	83	189	90	204	104	144	127	89	120
SAN JOSE STATE U/CA	868	97	84	108	99	110	199	86	284	65	137	136	65	164
KENTUCKY, UNIV OF	860	98	140	62	134	76	175	98	177	122	145	125	89	119
SOUTHERN CALIF, U OF	849	99	126	70	103	104	165	107	179	120	155	117	121	86
ARKANSAS,U-FAYETTVLE	842	100	105	87	150	65	179	97	176	123	133	138	99	107
DREXEL UNIVERSITY/PA	841	101	34	209	104	100	208	84	242	84	166	103	87	123
BOSTON COLLEGE/MA	835	102	85	106	86	118	174	99	246	83	153	118	91	115
ALABAMA, UNIVER OF	833	103	78	114	104	102	183	93	199	106	157	115	112	94
REED COLLEGE/OR	821	104	105	88	131	78	180	95	163	132	153	120	89	121
OREGON, UNIV OF	814	105	71	121	81	125	161	108	213	100	188	88	100	106
BRANDEIS UNIV/MA	811	106	19	303	70	140	154	116	219	95	208	82	141	72
NEW MEXICO, UNIV OF	805	107	83	109	97	113	138	127	209	102	169	101	109	98
POMONA COLLEGE/CA	805	108	93	95	113	91	161	109	178	121	155	116	105	100
MIAMI, UNIV OF/FL	801	109	90	97	104	101	155	115	197	108	165	106	90	116
GEO WASHINGTON U/DC	786	110	128	69	110	94	160	112	182	115	148	122	58	172
CARLETON COLLEGE/MN	782	111	51	153	65	152	180	94	209	101	159	110	118	90
CALIF, U-SAN DIEGO	778	112					1	1167	71	256	383	31	323	19
VANDERBILT UNIV/TN	755	113	72	118	89	117	151	118	173	125	178	93	92	114
MISSISSIPPI STATE U	749	114	99	91	95	115	168	103	180	118	120	146	87	124
OHIO UNIVERSITY	748	115	69	123	83	119	173	101	188	111	159	109	76	140
LOYOLA U CHICAGO/IL	748	116	72	117	82	123	167	106	186	112	166	104	75	141
ARIZONA STATE UNIV	740	117	29	233	75	134	123	140	202	105	180	91	131	79
MANHATTAN COLLEGE/NY	733	118	59	137	114	86	190	89	189	110	129	140	52	189
NORTHEASTERN U/MA	716	119	81	110	61	156	167	104	164	130	157	113	86	125
TULANE U OF LA	715	120	79	112	83	120	159	113	184	114	139	131	71	147

SOURCE: NATIONAL RESEARCH COUNCIL'S SURVEY OF EARNED DOCTORATES

000164

APPENDIX A

NUMBER OF BACCALAUREATES WHO EARNED S/E PHDS BY BA INSTITUTION & YEAR OF BACCALAUREATE

INSTITUTION NAME	TOTAL N	TOTAL RANK	1950-54 N	1950-54 RANK	1955-59 N	1955-59 RANK	1960-64 N	1960-64 RANK	1965-69 N	1965-69 RANK	1970-74 N	1970-74 RANK	1975-79 N	1975-79 RANK
ST LOUIS UNIV/MO	706	121	80	111	103	103	173	102	185	113	122	142	43	231
RHODE ISLAND, U OF	703	122	71	120	78	129	133	132	165	128	146	124	110	97
MARQUETTE UNIV/WI	703	123	56	146	115	85	160	111	173	124	144	126	55	122
HOUSTON, U OF/TX	703	124	41	175	59	167	87	194	229	89	197	85	90	117
WILLIAM & MARY, C/VA	692	125	54	147	58	170	108	154	145	148	176	96	151	67
MAINE, U-ORONO	683	126	91	96	104	99	131	134	164	129	113	154	80	132
AMHERST COLLEGE/MA	682	127	75	115	130	79	139	126	171	126	105	165	62	167
CAL ST U, LONG BEACH	682	128	9	492	38	231	137	129	273	69	153	121	72	145
SUNY AT BINGHAMTON	673	129	9	468	19	352	107	155	180	116	200	84	158	61
UNION UNIVERSITY/NY	669	130	105	84	98	111	119	144	147	145	108	161	92	112
ANTIOCH COLLEGE/OH	668	131	100	90	100	106	156	114	162	135	105	168	45	223
NEW HAMPSHIRE, U OF	663	132	85	105	99	107	131	135	119	165	147	123	82	129
SUNY AT ALBANY	663	133	31	224	44	201	51	276	102	186	220	75	215	46
HAWAII, UNIV OF	653	134	69	124	56	177	99	172	170	127	158	112	101	103
MONTANA STATE UNIV	643	135	93	94	99	109	147	120	141	150	106	164	57	176
BUCKNELL UNIV/PA	642	136	50	157	46	195	108	153	162	134	168	102	108	99
KENT STATE UNIV/OH	630	137	67	127	77	130	115	147	138	151	157	114	76	139
FRNKLN&MARSHAL C/PA	621	138	59	138	82	122	136	130	163	131	99	176	82	131
SAN FRANCISC ST U/CA	617	139	32	223	62	155	143	121	222	93	107	163	51	194
WESLEYAN UNIV/CT	605	140	65	129	68	142	129	137	111	176	114	152	118	88
EMORY UNIV/GA	589	141	57	144	73	136	103	163	151	140	116	149	89	118
VERMONT, U OF	581	142	71	119	70	139	95	177	113	172	119	147	113	92
IDAHO, UNIV OF	567	143	89	98	111	92	137	128	126	159	58	267	46	222
WILLIAMS COLLEGE/MA	563	144	62	131	78	128	125	139	113	173	105	166	80	133
CLEMSON UNIV/SC	557	145	45	166	79	127	116	146	138	152	91	182	88	122
COOPER UNION/NY	555	146	50	155	100	105	160	110	122	160	75	218	48	208
CALIF,U-IRVINE	554	147							78	239	274	58	202	50
WOOSTER, COLL OF/OH	552	148	57	143	67	148	140	123	149	142	89	186	50	195
CAL ST U,LOS ANGELES	549	149	27	247	42	211	88	190	218	97	139	132	35	277
WELLESLEY COLLEGE/MA	545	150	45	164	67	146	103	162	132	153	119	148	79	135
STHRN METHODIST U/TX	544	151	60	136	83	121	140	125	110	177	101	174	50	198
WYOMING, UNIV OF	544	152	63	130	76	133	122	142	120	164	102	172	61	170
VILLANOVA UNIV/PA	538	153	35	202	48	192	129	138	127	156	132	139	67	156
RADCLIFFE C/MA	536	154	40	177	59	165	154	117	150	141	92	178	41	240
GEORGETOWN UNIV/DC	535	155	32	221	59	166	106	158	145	147	122	143	71	146
OCCIDENTAL COLL/CA	533	156	49	160	60	164	119	145	147	146	109	160	49	207
DAYTON, U OF/OH	532	157	33	215	60	161	101	166	151	139	140	130	47	216
CALIF,U-SANTA CRUZ	527	158							64	278	244	69	219	45
GRINNELL COLLEGE/IA	524	159	40	185	58	169	133	133	148	144	89	187	56	179
CAL ST U, FRESNO	520	160	39	192	64	153	101	169	149	143	115	151	52	190

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000165

APPENDIX A

NUMBER OF BACCALAUREATES WHO EARNED S/E PHDS BY BA INSTITUTION & YEAR OF BACCALAUREATE

INSTITUTION NAME	TOTAL N	TOTAL RANK	1950-54 N	1950-54 RANK	1955-59 N	1955-59 RANK	1960-64 N	1960-64 RANK	1965-69 N	1965-69 RANK	1970-74 N	1970-74 RANK	1975-79 N	1975-79 RANK
NORTHERN ILL UNIV	516	161	25	254	28	269	75	225	154	138	142	128	92	113
DEPAUW UNIVERSITY/IN	515	162	70	122	94	116	131	136	95	198	78	206	47	217
LIU-BROOKLYN CMPS/NY	512	163	58	140	31	257	94	179	162	133	111	156	56	178
LAFAYETTE COLLEGE/PA	509	164	66	128	68	143	121	143	117	169	89	185	48	211
WESTERN MICHIGAN U	508	165	28	240	43	208	100	170	142	149	138	133	57	175
BAYLOR UNIV/TX	504	166	62	134	68	144	113	150	127	157	91	183	43	233
NEW MEXICO STATE U	487	167	37	199	51	187	101	168	118	168	115	150	65	163
SMITH COLLEGE/MA	485	168	28	235	34	244	87	191	130	154	120	145	86	126
MICHIGAN TECH UNIV	481	169	43	171	76	132	140	124	72	252	88	188	62	168
ST OLAF COLLEGE/MN	481	170	51	154	70	141	101	167	92	205	104	169	63	166
HOFSTRA UNIV/NY	480	171	40	179	43	206	104	161	126	158	102	171	65	161
ST JOHNS U-QUEENS/NY	477	172	68	125	63	154	106	156	127	155	79	203	34	278
N TEXAS STATE UNIV	475	173	60	135	73	137	112	152	116	170	76	215	38	262
CAL ST U, NORTHRIDGE	475	174			1	1040	45	316	179	119	172	100	78	136
NORTH DAKOTA ST UNIV	473	175	62	133	82	124	106	157	100	190	78	209	45	224
DETROIT, U OF/MI	470	176	51	152	65	151	135	131	122	162	70	232	27	322
CATHOLIC U AMER/DC	470	177	75	116	54	179	113	149	114	171	83	194	31	294
CLARK UNIVERSITY/MA	467	178	33	213	36	237	71	224	108	180	137	134	82	130
HAVERFORD COLL/PA	467	179	62	132	67	147	92	182	87	218	75	220	84	128
PUERTO RICO, UNIV OF	467	180	38	197	61	159	87	195	107	183	108	162	66	159
BOWLING GREEN S U/OH	464	181	45	165	40	219	73	219	101	188	137	135	68	153
WISCONSIN,U-MILWAUKE	464	182	1	907	11	486	42	326	156	137	158	111	96	108
MT HOLYOKE COLL/MA	458	183	37	198	45	199	86	196	112	174	110	158	68	151
SOUTH CAROLINA, U OF	456	184	30	229	56	175	85	200	95	199	122	144	68	155
WORCESTER POLY I/MA	453	185	39	188	51	185	101	165	119	166	75	216	68	152
SOUTH FLORIDA, U OF	441	186					38	343	158	136	141	129	104	102
MONTANA, UNIV OF	439	187	58	142	68	145	88	189	98	194	86	192	41	246
DENVER, UNIV OF/CO	434	188	87	101	54	180	89	188	98	195	77	212	29	312
CAL POL S U-SL OBISP	426	189	40	186	48	193	90	186	107	182	79	205	62	169
US MILITARY ACADEMY	425	190	86	102	109	95	86	197	79	233	56	269	9	583
VASSAR COLLEGE/NY	425	191	43	169	38	225	79	208	86	220	105	167	74	142
WHEATON COLLEGE/IL	424	192	53	148	61	157	112	151	93	203	56	270	49	202
CALVIN COLLEGE/MI	424	193	38	196	79	126	92	183	73	245	74	222	68	154
HOWARD UNIVERSITY/DC	423	194	44	168	32	252	77	213	108	181	114	153	48	212
COLGATE U/NY	421	195	40	178	37	233	67	230	98	193	102	170	77	138
CLARKSON UNIV/NY	409	196	34	207	35	240	87	192	120	163	70	229	63	165
SOUTH DAKOTA STATE U	409	197	59	139	74	135	98	173	94	201	49	295	35	275
HOLY CROSS, C OF/MA	404	198	42	172	51	184	71	225	118	167	80	199	42	234
US NAVAL ACADEMY/MD	404	199	97	93	107	97	98	174	66	273	29	414	7	675
STEVENS INST TECH/NJ	396	200	24	262	58	168	94	180	90	211	89	184	41	241

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000.66

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INSTITUTION NAME	TOTAL N	TOTAL RANK	1950-54 N	1950-54 RANK	1955-59 N	1955-59 RANK	1960-64 N	1960-64 RANK	1965-69 N	1965-69 RANK	1970-74 N	1970-74 RANK	1975-79 N	1975-79 RANK
OHIO WESLEYAN UNIV	395	201	52	149	65	150	113	148	73	244	66	241	26	335
KALAMAZOO COLLEGE/MI	394	202	40	184	35	242	82	202	83	225	81	196	73	144
WAKE FOREST UNIV/NC	390	203	28	241	32	253	65	236	104	185	92	180	69	150
YESHIVA UNIV/NY	388	204	50	156	60	160	97	175	81	229	72	223	28	313
BOWDOIN COLLEGE/ME	376	205	33	212	47	194	104	160	63	279	64	244	65	160
HOPE COLLEGE/MI	375	206	40	183	39	222	89	187	90	213	62	250	55	181
HARVEY MUDD COLL/CA	369	207			1	1044	62	245	100	191	110	159	96	109
EARLHAM COLLEGE/IN	368	208	40	182	31	259	95	178	104	184	58	265	40	248
CAL ST U, SACRAMENTO	363	209	9	493	28	277	81	205	109	179	101	175	40	251
WICHITA ST UNIV/KS	367	210	39	190	57	172	82	203	89	215	60	256	40	250
VALPARAISO UNIV/IN	366	211	38	195	38	229	105	159	100	189	51	288	34	280
BRYN MAWR COLL/PA	365	212	40	181	40	218	72	220	91	207	80	200	42	236
NORTH DAKOTA, U OF	365	213	32	220	61	158	99	171	86	221	58	266	29	309
FAIRLEIGH DICKN U/NJ	364	214	4	646	20	335	87	193	122	161	92	179	39	253
DENISON UNI"/OH	359	215	35	203	38	227	59	251	82	227	101	173	44	227
BELOIT COLLEGE/WI	357	216	32	219	50	188	62	243	99	192	78	208	36	267
ST. JOSEPHS UNIV/PA	356	217	30	226	46	196	79	209	78	237	69	235	54	184
KNOX COLLEGE/IL	354	218	24	264	44	203	94	181	85	222	78	207	29	306
LOUISVILLE, U OF/KY	352	219	52	151	56	176	81	204	79	235	54	276	30	302
DAVIDSON COLLEGE/NC	351	220	30	228	41	215	72	223	81	230	77	211	50	197
PROVIDENCE COLL/RI	346	221	29	230	45	200	82	201	96	196	52	283	42	235
WABASH COLLEGE/IN	345	222	34	210	53	182	102	164	79	234	45	306	32	285
AKRON, U OF/OH	342	223	46	162	41	213	65	234	51	331	86	191	53	188
MIDDLEBURY COLL/VT	341	224	39	187	54	178	73	217	63	280	69	234	43	229
ALLEGHENY COLLEGE/PA	340	225	36	201	39	221	80	206	78	236	60	255	47	215
AMERICAN UNIV/DC	340	226	35	205	20	342	65	235	91	209	97	177	32	287
TRINITY COLLEGE/CT	339	227	34	206	43	205	69	227	72	249	68	237	53	187
GETTYSBURG COLL/PA	336	228	28	237	24	295	77	212	88	216	71	228	48	210
MACALESTER COLL/MN	336	229	24	265	28	273	55	263	96	197	91	181	42	238
ADELPHI UNIV/NY	335	230	36	200	27	278	64	238	93	202	75	217	40	247
TOLEDO, UNIV OF/OH	334	231	26	249	41	214	61	246	91	208	74	221	41	243
LA SALLE UNIV/PA	331	232	20	296	41	212	51	277	101	187	76	213	42	237
SOWESTERN LA, U OF	330	233	27	245	51	186	90	185	73	246	66	242	23	365
HUMBOLDT STATE U/CA	330	234	4	694	18	374	51	285	92	206	87	190	78	137
ALFRED UNIVERSITY/NY	329	235	38	194	48	191	77	211	62	284	60	253	44	225
BRADLEY UNIV/IL	325	236	46	163	43	207	66	233	66	271	76	214	28	314
ROOSEVELT UNIV/IL	325	237	86	103	56	1..	72	222	77	240	27	433	7	667
COLORADO COLLEGE	319	238	27	246	37	236	55	265	83	226	66	243	51	193
TEXAS CHRISTIAN UNIV	318	239	32	222	50	190	97	176	67	268	45	311	27	328
COLORADO SCH MINES	313	240	41	176	60	162	65	237	52	329	63	249	32	288

SOURCE: NATIONAL RESEARCH COUNCIL'S SURVEY OF EARNED DOCTORATES

00v.67

APPENDIX A

NUMBER OF BACCALAUREATES WHO EARNED S/E PHDS BY BA INSTITUTION & YEAR OF BACCALAUREATE

INSTITUTION NAME	TOTAL N	TOTAL RANK	1950-54 N	1950-54 RANK	1955-59 N	1955-59 RANK	1960-64 N	1960-64 RANK	1965-69 N	1965-69 RANK	1970-74 N	1970-74 RANK	1975-79 N	1975-79 RANK
MISSISSIPPI, UNIV OF	312	241	33	217	42	210	80	207	91	210	41	330	25	346
PORTLAND STATE U/OR	312	242	1	967	13	455	86	199	110	178	70	233	32	289
LOUISIANA TECH UNIV	311	243	25	260	52	183	86	198	84	224	42	324	22	372
MUHLENBERG COLL/PA	307	244	33	214	35	241	50	287	66	270	58	263	65	162
LAWRENCE UNIV/WI	307	245	34	211	28	271	51	280	84	223	80	201	30	299
MISSOURI,U-KANS CITY	306	246	25	255	25	293	61	248	78	238	81	198	36	268
NEVADA, UNIV OF	306	247	39	191	32	255	58	256	56	311	72	225	49	206
SANTA CLARA UNIV/CA	306	248	15	355	27	281	59	252	87	219	64	247	54	186
MEMPHIS STATE U/TN	305	249	23	273	37	235	64	239	82	228	68	238	31	296
DUQUESNE UNIV/PA	304	250	49	158	31	258	70	226	90	212	53	279	11	530
ILLINOIS ST U-NORMAL	302	251	22	279	22	316	51	279	69	263	72	224	66	158
HAMILTON COLLLGE/NY	298	252	27	242	40	217	66	232	57	301	70	230	38	256
ST LAWRENCE UNIV/NY	293	253	40	180	30	261	42	324	69	260	75	219	37	264
LAMAR UNIVERSITY/TX	292	254	8	523	38	230	91	184	81	231	51	290	23	366
DEPAUL UNIVERSITY/IL	291	255	41	174	42	209	72	221	67	267	41	328	28	315
CAL ST U, FULLERTON	291	256					14	612	95	200	111	157	71	148
CANISIUS COLLEGE/NY	290	257	21	281	32	251	73	218	69	259	60	254	35	272
XAVIER UNIV/OH	289	258	28	238	46	197	76	214	69	262	45	305	25	342
AUGUSTANA COLL/IL	289	259	35	204	56	173	51	278	61	292	48	300	38	261
SETON HALL UNIV/NJ	279	260	43	170	23	304	47	301	92	204	48	299	26	332
BATES COLLEGE/ME	278	261	23	269	37	232	49	291	59	297	59	258	51	191
JOHN CARROLL UNIV/OH	276	262	14	361	38	228	69	228	72	250	52	285	31	292
LOWELL, UNIV OF/MA	275	263	7	528	19	351	45	310	68	265	79	202	57	174
WESTERN WASHINGTON U	275	264	12	413	17	390	39	339	90	214	79	204	38	263
USAF ACADEMY/CO	267	265			8	585	69	229	112	175	69	236	9	614
BEREA COLLEGE/KY	266	266	52	150	58	171	54	268	56	310	27	440	19	405
NEW JERSEY INST TECH	265	267	29	232	44	202	78	210	69	261	34	375	11	529
WESTERN ILLINOIS U	265	268	11	421	16	394	47	302	72	251	82	195	37	265
SAN FRANCSCO,U OF/CA	264	269	14	371	21	332	48	299	80	232	86	193	15	468
CAL ST U, CHICO	262	270	15	354	32	256	51	284	73	248	55	274	36	271
SUNY ENVR SCI FRSTRY	261	271	32	218	28	267	45	312	45	360	53	278	58	171
EASTERN ILL UNIV	260	272	15	349	36	238	43	322	62	286	64	245	40	249
REDLANDS, U OF/CA	258	273	45	167	40	220	52	275	72	253	39	344	10	576
SCRANTON, U OF/PA	257	274	39	189	20	337	48	295	75	242	39	338	36	266
JUNIATA COLLEGE/PA	255	275	22	278	23	306	62	242	71	254	44	313	33	282
DICKINSON COLL/PA	254	276	24	263	23	305	34	360	74	243	58	262	41	242
RICHMOND, U OF/VA	254	277	30	227	36	239	52	272	77	241	33	388	26	338
TULSA, UNIV OF/OK	251	278	24	268	46	198	46	309	50	339	42	325	43	232
CAL ST POLY-POMONA	251	279			4	763	30	396	88	217	72	226	57	177
DREW UNIVERSITY/NJ	250	280	29	231	37	234	50	286	48	346	51	286	35	274

SOURCE: NATIONAL RESEARCH COUNCIL'S SURVEY OF EARNED DOCTORATES

00v168

APPENDIX A

NUMBER OF BACCALAUREATES WHO EARNED S/E PHDS BY BA INSTITUTION & YEAR OF BACCALAUREATE

INSTITUTION NAME	TOTAL N	TOTAL RANK	1950-54 N	1950-54 RANK	1955-59 N	1955-59 RANK	1960-64 N	1960-64 RANK	1965-69 N	1965-69 RANK	1970-74 N	1970-74 RANK	1975-79 N	1975-79 RANK
KENYON COLLEGE/OH	248	281	21	287	33	247	44	317	62	285	39	340	49	201
WHITMAN COLLEGE/WA	248	282	23	275	23	314	57	259	73	247	50	292	22	374
WITTENBERG UNIV/OH	247	283	12	397	25	291	56	261	57	302	58	264	39	254
ALBION COLLEGE/MI	245	284	21	288	28	270	57	257	57	304	55	273	27	321
WISCONSIN,U-STEVN PT	245	285	7	537	24	297	38	341	60	295	67	239	49	203
ST THOMAS, C OF/MN	245	286	47	161	35	243	51	282	60	296	34	377	18	416
ST JOHNS UNIV/MN	244	287	26	250	30	262	62	244	45	363	51	289	30	300
INDIANA UNIV OF PA	242	288	12	395	14	420	40	329	66	269	55	272	55	180
FAIRFIELD UNIV/CT	241	289	8	496	21	321	47	300	61	289	57	268	47	214
CLEVELAND ST UNIV/OH	241	290	7	531	19	355	39	335	52	326	70	231	54	185
ST PETERS COLL/NJ	240	291	34	208	28	268	63	240	63	281	38	347	14	472
COLBY COLLEGE/ME	235	292	19	302	13	431	39	333	69	258	46	302	49	199
PHILA C PHARM&SCI/PA	235	293	42	173	38	226	63	241	51	330	26	445	15	458
SOUTHERN MISS, U OF	235	294	21	293	29	264	58	255	57	305	35	369	35	276
CONCORDIA-MORHEAD/MN	234	295	33	216	39	223	74	216	39	399	26	451	23	362
YOUNGSTOWN ST U/OH	229	296	19	304	16	392	53	270	54	316	49	293	38	260
LOYOLA COLLEGE/MD	227	297	25	257	24	300	47	304	65	275	37	354	29	310
WESTERN KENTUCKY U	226	298	20	301	20	343	52	273	64	277	43	319	27	327
TENNESSEE TECH U	225	299	21	291	26	289	55	264	62	288	38	351	23	364
S DAKOTA S MINE&TECH	222	300	27	244	50	189	58	254	39	401	33	386	15	460
DRAKE UNIV/IA	216	301	19	307	27	279	61	247	41	389	44	315	24	353
GEORGIA STATE UNIV	216	302			7	613	25	434	68	256	88	189	28	317
CENTRAL MICHIGAN U	215	303	13	379	15	406	47	303	63	282	45	307	32	286
SOUTH DAKOTA, U OF	214	304	23	272	27	280	46	307	53	324	43	317	22	369
EMPORIA ST UNIV/KS	213	305	25	256	26	287	67	231	48	350	33	387	14	480
GONZAGA UNIV/WA	213	306	16	341	41	216	45	315	71	255	25	466	15	465
OAKLAND UNIV/MI	211	307					19	519	70	257	81	197	41	244
FURMAN UNIV/SC	211	308	19	309	21	328	24	444	49	341	49	296	49	204
BALL STATE UNIV/IN	210	309	20	297	15	405	45	313	55	313	49	294	26	336
RHODES COLLEGE/TN	210	310	19	310	22	318	49	294	62	287	36	362	22	371
LOYOLA MARYMONT U/CA	210	311	16	343	21	331	50	290	61	294	37	356	25	349
WISCONSIN,U-E CLAIRE	209	312	5	607	14	425	28	403	59	298	53	281	50	196
MILLSAPS COLLEGE/MS	209	313	26	251	33	249	40	332	49	342	43	320	18	419
TRINITY UNIV/TX	207	314	17	329	25	294	27	414	49	343	59	261	30	303
MARIETTA COLLEGE/OH	205	315	25	253	23	307	53	269	47	354	37	352	20	388
CREIGHTON UNIV/NE	205	316	20	300	21	326	49	293	50	336	38	350	27	324
ABILENE CHRIST U/TX	205	317	19	311	34	246	44	319	52	328	35	370	21	379
IDAHO STATE UNIV	205	318	23	274	29	265	38	3..	69	264	30	407	16	443
HOBART&WM SMITH C/NY	204	319	13	373	20	333	29	398	61	290	54	275	27	318
WISCONSIN,U-RIVR FLS	203	320	16	335	28	272	51	281	47	355	32	393	29	308

SOURCE: NATIONAL RESEARCH COUNCIL'S SURVEY OF EARNED DOCTORATES

00v169

APPENDIX A

NUMBER OF BACCALAUREATES WHO EARNED S/E PHDS BY BA INSTITUTION & YEAR OF BACCALAUREATE

INSTITUTION NAME	TOTAL N	TOTAL RANK	1950-54 N	1950-54 RANK	1955-59 N	1955-59 RANK	1960-64 N	1960-64 RANK	1965-69 N	1965-69 RANK	1970-74 N	1970-74 RANK	1975-79 N	1975-79 RANK
NEBRASKA,U-OMAHA	203	321	21	289	26	286	50	289	51	331	36	361	19	403
VIRGINIA MILITARY I	203	322	31	225	34	245	54	267	56	308	24	474	4	832
MURRAY STATE UNIV/KY	203	323	14	367	21	329	57	258	54	320	40	335	17	430
PITTSBURG STATE U/KS	201	324	19	308	24	299	61	250	66	272	23	484	8	636
NORTHERN IOWA, U OF	200	325	24	267	19	358	50	288	44	369	37	353	26	337
MARSHALL UNIV/WV	200	326	25	258	26	288	46	308	50	337	27	439	26	339
LE MOYNE COLLEGE/NY	199	327	8	497	26	282	52	271	61	291	34	372	18	410
URSINUS COLLEGE/PA	199	328	25	252	21	323	36	350	47	353	36	358	34	279
SW MISSOURI ST UNIV	198	329	17	325	28	275	38	342	53	323	34	378	28	316
WILLAMETTE UNIV/OR	198	330	23	276	44	204	57	260	42	385	16	584	16	444
WASHINGTON&LEE U/VA	197	331	17	327	24	301	44	318	48	351	39	342	25	343
INDIANA STATE UNIV	195	332	15	348	19	356	43	321	54	317	53	280	11	532
LEBANON VALLEY C/PA	194	333	21	284	21	322	30	385	56	306	41	327	25	341
WASH&JEFFERSON C/PA	193	334	21	285	19	354	54	266	41	387	39	339	19	398
ST MARYS COLLEGE/MN	193	335	19	306	28	274	58	253	65	274	18	551	5	762
EAST CAROLINA U/NC	193	336	9	486	23	312	32	373	50	338	60	257	19	404
EASTERN MICHIGAN U	191	337	13	380	15	407	46	306	44	367	44	314	29	307
LUTHER COLLEGE/IA	191	338	17	323	25	292	42	327	48	349	35	368	24	354
FORT HAYS STATE U/KS	186	339	14	364	19	359	61	249	54	319	24	473	14	479
S F AUSTIN ST U/TX	186	340	11	432	19	364	31	382	59	299	41	331	25	347
HIRAM COLLEGE/OH	185	341	21	286	11	479	39	336	56	307	40	334	18	413
BUTLER UNIV/IN	185	342	23	271	33	248	31	377	43	374	26	449	29	305
LOYOLA UNIVERSITY/LA	185	343	25	261	33	250	48	297	40	392	20	532	19	407
IONA COLLEGE/NY	184	344	16	331	20	334	46	305	64	276	26	443	12	515
SPRING HILL COLL/AL	183	345	25	259	39	224	52	274	47	356	12	671	8	647
LORAS COLLEGE/IA	182	346	16	336	26	285	51	283	48	348	31	401	10	562
GUSTAV ADOLPHUS C/MN	179	347	19	305	24	298	36	352	42	380	27	435	31	293
SUNY COLL OSWEGO	177	348	3	709	5	676	15	580	42	379	66	240	46	219
WILKES COLLEGE/PA	176	349	14	359	12	465	33	364	55	312	31	400	31	291
MANKATO STATE U/MN	176	350	17	322	18	367	39	337	54	318	34	376	14	477
ALBRIGHT COLLEGE/PA	174	351	16	332	22	315	31	376	45	361	33	384	27	320
ST VINCENT COLL/PA	172	352	15	346	20	336	49	292	58	300	23	480	7	665
SOUTHEASTERN LA U	172	353	14	368	28	276	36	353	55	315	24	476	15	464
GOSHEN COLLEGE/IN	171	354	10	438	14	422	48	296	57	303	28	423	14	475
NORTHERN COLORADO,U	171	355	13	388	18	371	43	323	31	453	45	312	21	380
LEWIS & CLARK C/OR	170	356	18	314	18	373	31	383	45	365	34	382	24	359
HAMLINE UNIV/MN	169	357	17	321	23	309	33	367	48	347	36	360	12	521
CORNELL COLLEGE/IA	169	358	24	266	20	339	33	368	53	322	24	472	15	459
OLD DOMINION UNIV/VA	167	359			1	1004	24	443	52	327	63	248	27	325
VA COMMONWEALTH UNIV	167	360	4	669	15	412	19	526	26	494	59	260	44	228

SOURCE: NATIONAL RESEARCH COUNCIL'S SURVEY OF EARNED DOCTORATES

APPENDIX A

NUMBER OF BACCALAUREATES WHO EARNED S/E PHDS BY BA INSTITUTION & YEAR OF BACCALAUREATE

INSTITUTION NAME	TOTAL N	TOTAL RANK	1950-54 N	1950-54 RANK	1955-59 N	1955-59 RANK	1960-64 N	1960-64 RANK	1965-69 N	1965-69 RANK	1970-74 N	1970-74 RANK	1975-79 N	1975-79 RANK
PACIFIC, U OF/CA	167	361	16	344	20	350	35	358	43	377	32	397	21	381
MONTCLAIR ST COLL/NJ	166	362	9	469	13	435	23	448	43	373	35	365	43	230
WISCONSIN,U-OSHKOSH	166	363	8	503	12	468	26	420	51	332	45	308	24	352
NORTHERN ARIZONA U	166	364	6	595	8	586	17	556	40	393	53	282	42	239
PUGET SOUND, U OF/WA	166	365	15	353	16	401	35	357	37	417	33	389	30	304
KINGS COLLEGE/PA	165	366	21	283	19	353	38	340	32	439	31	399	24	350
LAKE FOREST COLL/IL	165	367	11	420	2	559	33	365	55	314	38	349	20	389
ST MARYS UNIV/TX	164	368	12	411	32	254	36	354	54	321	21	522	9	609
ROSE-HULMAN TECH/IN	163	369	12	398	14	423	35	356	45	362	39	341	18	414
FLORIDA ATLANTIC U	163	370							56	309	61	252	46	221
SEATTLE UNIV/WA	162	371	13	389	20	348	30	394	51	335	33	390	15	466
CAL ST U, HAYWARD	162	372					8	751	63	283	64	246	27	329
WHITTIER COLLEGE/CA	162	373	29	234	15	416	41	328	40	395	30	408	7	695
BALDWIN-WALLACE C/OH	159	374	23	270	13	437	29	399	33	433	42	323	19	399
ILL BENEDICTINE COLL	159	375	11	418	11	483	40	330	49	340	27	432	21	377
THOMAS MORE COLL/KY	159	376	8	514	16	399	27	409	44	370	44	316	20	393
SW TEXAS STATE UNIV	159	377	12	412	17	385	38	344	47	357	34	381	11	549
PACIFIC LTHRN U/WA	159	378	14	370	18	372	25	438	42	384	36	363	24	358
BRIDGEPORT, U OF/CT	158	379	10	434	13	432	22	462	48	345	45	304	20	382
ST BONAVENTURE U/NY	158	380	21	282	25	290	45	311	30	454	25	458	12	516
GOUCHER COLLEGE/MD	158	381	9	482	15	411	26	423	43	375	47	301	18	417
AUSTIN COLLEGE/TX	158	382	5	629	19	363	31	381	53	325	26	454	24	357
TEXAS A&I UNIVERSITY	157	383	10	462	19	365	48	298	37	416	30	405	13	512
CONNECTICUT COLLEGE	156	384	8	495	7	592	20	492	42	378	46	303	33	281
WESTERN MARYLAND COL	155	385	18	313	17	382	26	424	39	402	32	394	23	363
EAST TEXAS STATE U	155	386	21	294	16	400	28	406	45	364	34	380	11	548
MASS, U-BOSTON	154	387	1	852					35	420	71	227	47	213
SOUTH, UNIV OF/TN	153	388	12	408	24	303	33	369	46	359	24	475	14	484
N MEX I MINING&TECH	152	389	5	633	17	388	27	416	35	426	43	321	25	348
MANCHESTER COLL/IN	151	390	20	298	26	283	42	325	23	523	21	515	19	400
STETSON UNIV/FL	151	391	9	488	19	360	34	363	51	334	23	487	15	463
SUNY COLL CORTLAND	150	392	2	780	7	595	14	597	37	413	52	284	38	257
SE MISSOURI ST UNIV	150	393	22	280	23	310	32	372	39	400	22	500	12	522
NEBRASKA WESLEYAN U	148	394	18	312	15	409	31	379	28	475	34	379	22	370
CUNY-HRBERT LEHMAN C	144	395			1	936	5	822	22	534	77	210	39	252
EAST TENN STATE UNIV	144	396	10	457	17	384	27	410	44	371	32	395	14	483
BIRMNGHAM-STHRN C/AL	143	397	21	292	21	330	30	388	40	391	22	506	9	604
TUSKEGEE UNIV/AL	143	398	10	458	12	472	27	411	41	390	28	429	25	345
ROCHESTER I TECH/NY	142	399			14	417	30	384	37	411	34	373	27	319
WISCONSIN,U-PLATTVIL	142	400	5	608	16	395	28	404	44	368	36	359	13	500

SOURCE: NATIONAL RESEARCH COUNCIL'S SURVEY OF EARNED DOCTORATES

000215

APPENDIX A

NUMBER OF BACCALAUREATES WHO EARNED S/E PHDS BY BA INSTITUTION & YEAR OF BACCALAUREATE

INSTITUTION NAME	TOTAL N	TOTAL RANK	1950-54 N	1950-54 RANK	1955-59 N	1955-59 RANK	1960-64 N	1960-64 RANK	1965-69 N	1965-69 RANK	1970-74 N	1970-74 RANK	1975-79 N	1975-79 RANK
ROCKHURST COLLEGE/MO	142	401	13	381	20	341	45	314	38	406	17	565	9	595
MERRIMACK COLLEGE/MA	141	402	6	554	10	500	31	375	39	396	38	345	17	423
SIMMONS COLLEGE/MA	141	403	9	465	11	476	29	397	37	410	40	333	15	449
SUNY COLL FREDONIA	141	404			4	718	10	680	34	428	55	271	38	258
WAGNER COLLEGE/NY	141	405	27	243	17	375	36	349	35	422	17	560	9	584
SUNY COLL NEW PALTZ	139	406	2	781	5	674	12	640	41	386	53	277	26	330
AUGUSTANA COLL/SD	139	407	12	405	18	369	34	362	27	482	28	427	20	390
MONMOUTH COLLEGE/IL	138	408	17	320	17	378	36	351	39	398	21	516	8	627
SE MASS U-N DARTMOTH	137	409	9	466	12	457	14	593	25	499	28	419	49	200
MISSOURI,U-ST LOUIS	137	410							30	459	61	251	46	220
ARKANSAS STATE UNIV	137	411	6	588	20	345	27	412	42	382	25	464	17	431
MUSKINGUM COLLEGE/OH	136	412	12	396	13	438	35	355	38	404	26	448	12	519
SIENA COLLEGE/NY	135	413	17	317	14	418	39	334	31	445	14	607	20	385
MIDDLE TENN STATE U	135	414	6	584	20	344	25	437	34	430	25	463	25	344
GROVE CITY COLL/PA	134	415	22	277	8	553	26	418	29	462	28	422	21	376
RIPON COLLEGE/WI	134	416	11	423	24	296	33	366	32	442	24	471	10	560
SUNY COLL BROCKPORT	133	417	3	708	3	777	7	756	15	639	59	259	46	218
CITADEL, THE/SC	133	418	16	338	31	260	39	338	32	444	13	641	2	1004
CAPITAL UNIV/OH	132	419	17	318	21	324	32	370	38	403	12	658	12	518
CENTRAL STATE U/OK	132	420	9	489	14	430	26	426	37	415	32	396	14	488
SAM HOUSTON ST U/TX	132	421	10	461	18	370	44	320	28	479	23	491	9	610
ST JOHN FISHER C/NY	131	422	1	863	15	403	25	430	37	412	34	374	19	396
WEBER STATE COLL/UT	131	423					6	814	61	293	41	332	23	367
NORTH CENTRAL C/IL	130	424	28	239	26	284	31	378	25	503	12	659	8	628
CARROLL COLLEGE/WI	130	425	10	440	23	308	32	371	19	567	28	424	18	415
UPSALA COLLEGE/NJ	129	426	28	236	10	502	20	495	30	455	28	420	13	495
GANNON UNIV/PA	129	427	9	471	6	626	27	407	46	358	25	460	16	438
SUNY COLL ONEONTA	128	428	1	865	5	675	9	699	31	446	38	346	44	226
CTRL MISSOURI ST U	128	429	12	403	18	368	34	361	26	492	27	437	11	537
TOWSON STATE U/MD	128	430	1	923	1	1001	9	712	35	424	43	318	39	255
ECKERD COLLEGE/FL	128	431					5	849	48	352	45	309	30	301
WEST TEXAS STATE U	128	432	6	593	17	386	27	415	42	383	30	406	6	730
CENTRAL UNIV OF IOWA	127	433	10	443	20	338	23	454	33	435	28	426	13	502
MOREHOUSE COLL/GA	127	434	21	290	22	317	28	405	31	450	17	567	8	643
EASTERN WASH UNIV/WA	127	435	10	463	9	547	30	393	49	344	15	602	14	492
HENDRIX COLLEGE/AR	126	436	8	521	11	493	26	425	38	407	23	488	20	394
NORWESTRN ST UNIV LA	126	437	8	522	20	346	30	390	25	508	29	417	14	487
DELAWARE VALLEY C/PA	125	438	3	715	13	436	20	496	44	366	19	537	26	333
COE COLLEGE/IA	125	439	20	299	19	357	23	455	28	474	27	436	8	634
EASTERN KENTUCKY U	125	440	14	366	12	471	21	486	24	515	30	404	24	356

SOURCE: NATIONAL RESEARCH COUNCIL'S SURVEY OF EARNED DOCTORATES

00v171

APPENDIX A

NUMBER OF BACCALAUREATES WHO EARNED S/E PHDS BY BA INSTITUTION & YEAR OF BACCALAUREATE

INSTITUTION NAME	TOTAL N	TOTAL RANK	1950-54 N	1950-54 RANK	1955-59 N	1955-59 RANK	1960-64 N	1960-64 RANK	1965-69 N	1965-69 RANK	1970-74 N	1970-74 RANK	1975-79 N	1975-79 RANK
NORTHERN MICHIGAN U	124	441	6	566	8	561	22	467	26	491	35	367	27	323
SOWESTFRN OKLA ST U	124	442	5	628	6	661	24	446	44	372	25	465	20	395
SUNY COLL PLATTSBURG	123	443	1	866	2	849	9	700	28	469	48	298	35	273
BELLARMINE COLL/KY	123	444	2	822	13	451	40	331	42	381	18	553	8	645
NE LOUISIANA UNIV	123	445	3	761	6	660	21	488	37	414	39	343	17	432
SUNY COLL GENESEO	122	446	1	864	2	848	17	547	23	519	41	326	38	259
HANOVER COLLEGE/IN	122	447	15	347	11	481	28	402	41	388	23	481	4	811
MISSISSIPPI COLLEGE	122	448	8	518	30	263	32	374	34	431	11	689	7	687
SOUTHERN UNIV/LA	120	449	4	685	20	347	27	413	38	408	23	490	8	650
ALMA COLLEGE/MI	119	450	10	439	11	484	25	431	29	465	25	461	19	401
WISCONSIN,U-L CROSSE	119	451	4	658	14	426	20	499	30	458	28	425	23	361
WILLIAM JEWELL C/MO	119	452	15	350	23	311	37	347	25	505	9	736	10	565
NEW COLL-SOUTH FLA U	119	453							18	591	50	291	51	192
HEIDELBERG COLL/OH	118	454	14	360	14	421	22	463	29	463	19	540	20	387
GMI ENGR&MNGMNT I/MI	118	455	6	565	15	408	37	346	32	441	19	541	9	593
BENEDICTINE COLL/KS	118	456	17	326	9	529	30	387	27	483	20	531	15	461
ST. CLOUD STATE U/MN	117	457	7	538	11	487	26	421	33	434	29	413	11	535
NIAGARA UNIV/NY	116	458	10	435	13	433	25	429	34	427	19	536	15	452
WESTMINSTER COLL/PA	116	459	13	376	15	404	20	497	28	472	22	497	18	412
NC, U OF-GREENSBORO	116	460	6	579	9	535	10	690	34	429	26	453	31	295
CENTRAL CONN ST UNIV	115	461	17	316	12	458	19	515	28	468	21	511	18	409
EVANSVILLE, U OF/IN	115	462	17	319	11	480	23	451	29	464	22	499	13	497
MORGAN STATE UNIV/MD	115	463	10	449	21	327	22	469	29	466	19	543	14	481
SONOMA STATE UNIV/CA	115	464							33	436	49	297	33	283
ST MICHAELS COLL/VT	114	465	12	391	16	391	21	473	36	418	14	605	15	448
SARAH LAWRENCE C/NY	113	466	12	394	12	463	17	545	22	536	30	403	20	384
IDAHO, COLLEGE OF	113	467	13	387	17	387	30	391	26	495	13	651	14	490
SEATTLE PACIFIC U/WA	113	468	17	330	22	320	26	427	26	496	17	571	5	789
CLRMONT MCKENNA C/CA	113	469	4	695	11	499	13	637	38	409	31	402	16	445
AMER INTERNATL C/MA	112	470	15	345	9	521	34	359	32	437	17	558	5	737
HARTWICK COLLEGE/NY	112	471	12	392	12	460	19	516	25	501	29	409	15	451
ST FRANCIS COLL/NY	111	472	20	295	13	434	20	493	23	517	25	459	10	55.
CENTRE COLL KENTUCKY	111	473	8	513	15	413	25	435	21	551	22	504	20	392
WEST CHESTER U OF PA	110	474	7	530	10	504	21	475	19	563	29	412	24	351
WEST VA WESLEYAN C	110	475	17	328	11	489	31	380	27	485	17	566	7	678
MILLERSVILLE U OF PA	109	476	4	649	6	630	12	642	23	521	38	348	26	334
APPALACHIAN ST U/NC	109	477	3	747	13	446	25	433	27	486	21	520	20	391
WOFFORD COLLEGE/SC	109	478	10	454	24	302	27	408	21	550	19	545	8	642
ST ANSELM COLL/NH	108	479	17	315	11	475	26	417	21	543	22	495	11	526
SKIDMORE COLLEGE/NY	108	480	4	645	4	716	17	546	32	438	36	357	15	453

SOURCE: NATIONAL RESEARCH COUNCIL'S SURVEY OF EARNED DOCTORATES

00v172

APPENDIX A

NUMBER OF BACCALAUREATES WHO EARNED S/E PHDS BY BA INSTITUTION & YEAR OF BACCALAUREATE

INSTITUTION NAME	TOTAL N	TOTAL RANK	1950-54 N	1950-54 RANK	1955-59 N	1955-59 RANK	1960-64 N	1960-64 RANK	1965-69 N	1965-69 RANK	1970-74 N	1970-74 RANK	1975-79 N	1975-79 RANK
ELMHURST COLLEGE/IL	108	481	16	333	12	466	21	478	16	623	35	366	8	626
WISCONSIN,U-WHITWATR	108	482	3	736	2	870	11	661	35	423	41	329	16	441
CHARLESTON, C OF/SC	108	483	15	351	4	747	16	571	22	541	15	598	36	270
MIDWESTERN ST U/TX	108	484	6	589	10	516	20	510	43	376	16	582	13	511
DAVID LIPSCOMB C/TN	107	485	11	428	9	539	25	436	31	451	22	505	9	603
ALASKA, UNIV OF	107	486	14	372	13	456	18	543	21	554	26	456	15	469
MASS COLL PHARMACY	106	487	26	248	28	266	19	514	24	511	5	862	4	797
HOUGHTON COLL/NY	106	488	11	416	12	461	19	517	25	502	23	478	16	436
THIEL COLLEGE/PA	106	489	5	602	5	679	26	419	30	456	26	447	14	474
HARDING UNIVERSTY/AR	106	490	3	758	11	492	30	389	28	477	22	507	12	524
ANDREWS UNIV/MI	105	491	11	422	17	379	25	432	25	504	15	588	12	520
CENTRAL WASH UNIV	104	492	5	634	7	622	18	541	40	394	23	492	11	551
ITHACA COLLEGE/NY	103	493	1	858	3	773	6	792	22	535	39	337	32	284
AUGSBURG COLLEGE/MN	103	494	6	567	4	732	20	500	38	405	27	434	8	632
MARIST COLLEGE/NY	102	495	6	556	7	593	14	595	35	421	31	398	9	582
PRATT INSTITUTE/NY	102	496	12	393	8	550	36	348	26	490	18	549	2	949
BARD COLLEGE/NY	101	497	5	597	10	501	25	428	26	489	21	512	14	470
OTTERBEIN COLLEGE/OH	101	498	14	362	13	439	21	476	31	448	13	636	9	589
MERCER UNIVERSITY/GA	101	499	8	512	8	573	15	589	27	487	28	428	15	462
EASTERN NEW MEXICO U	101	500	6	594	10	518	30	392	35	425	16	583	4	855
PORTLAND, UNIV OF/OR	101	501	13	390	20	349	30	395	19	581	13	653	6	734
ST MARYS COLL CALIF	101	502	7	553	15	415	25	439	26	498	23	493	5	794
OHIO NORTHERN UNIV	100	503	4	654	21	325	22	465	23	522	13	635	17	426
NC AG & TECH ST U	100	504	10	452	13	447	23	457	18	589	23	485	13	507
ROLLINS COLLEGE/FL	100	505	13	383	8	574	24	445	20	561	22	503	13	509
ST FRANCIS COLL/PA	99	506	7	529	9	526	24	441	32	440	21	514	6	705
ILLINOIS WESLEYAN U	99	507	11	419	5	682	16	564	28	473	26	450	13	498
HASTINGS COLLEGE/NE	99	508	11	425	17	381	24	442	23	525	14	617	10	566
WASHBURN U TOPEKA/KS	99	509	9	481	13	445	23	456	36	419	14	618	4	825
LYCOMING COLLEGE/PA	98	510	11	417	6	629	23	450	31	447	20	529	7	664
WRIGHT STATE UNIV/OH	98	511							17	602	51	287	30	298
TENN, U-CHATTANOOGA	98	512	13	385	11	490	20	508	20	562	21	521	13	510
WALLA WALLA COLL/WA	98	513	16	342	17	389	20	512	26	497	11	691	8	653
CARSON-NEWMAN C/TN	97	514	10	456	19	361	19	527	25	507	13	645	11	542
TEXAS WOMANS UNIV	96	515	8	525	6	663	24	447	28	480	21	524	9	611
RANDOLPH-MACON C/VA	95	516	9	484	17	383	20	505	30	460	12	664	7	676
MT UNION COLLEGE/OH	94	517	13	377	10	506	22	464	18	585	22	498	9	588
WARTBURG COLL/IA	94	518	12	401	13	443	21	482	16	626	21	517	11	536
CNTRL FLORIDA, U/FL	94	519									45	210	49	205
PHILLIPS UNIV/OK	94	520	14	369	19	362	23	460	17	612	12	672	9	608

SOURCE: NATIONAL RESEARCH COUNCIL'S SURVEY OF EARNED DOCTORATES

00473

APPENDIX A

NUMBER OF BACCALAUREATES WHO EARNED S/E PHDS BY BA INSTITUTION & YEAR OF BACCALAUREATE

INSTITUTION NAME	TOTAL N	TOTAL RANK	1950-54 N	1950-54 RANK	1955-59 N	1955-59 RANK	1960-64 N	1960-64 RANK	1965-69 N	1965-69 RANK	1970-74 N	1970-74 RANK	1975-79 N	1975-79 RANK
PR, U-MAYAGUEZ	94	521	1	978	3	835	4	917	11	741	43	322	32	290
DRURY COLLEGE/MO	93	522	11	424	16	397	19	521	19	569	17	564	11	538
LINFIELD COLLEGE/OR	93	523	12	414	16	402	23	461	23	531	11	692	8	654
EDINBORO U OF PENN	92	524	3	716	6	625	16	560	14	660	28	421	25	340
MOORHEAD STATE U/MN	92	525	5	610	8	563	16	566	31	449	15	590	17	427
MACMURRAY COLLEGE/IL	91	526	1	897	4	729	22	466	39	397	20	530	5	755
PARK COLLEGE/MO	91	527	17	324	17	380	29	401	17	607	9	734	2	973
BETHANY COLLEGE/WV	91	528	10	451	10	511	21	484	22	540	21	519	7	677
OKLAHOMA CITY UNIV	91	529	3	763	8	581	21	489	34	432	18	557	7	689
EMMANUEL COLLEGE/MA	90	530	5	596	4	708	19	513	28	467	25	457	9	578
GENEVA COLLEGE/PA	90	531	13	375	14	419	24	440	22	537	8	757	9	585
BLACKBURN COLLEGE/IL	90	532	13	378	18	366	21	477	19	564	8	761	11	534
ST NORBERT COLL/WI	90	533	10	441	8	562	18	533	30	457	17	562	7	669
FISK UNIVERSITY/TN	90	534	11	429	23	313	16	573	11	732	18	554	11	543
HARTFORD, UNIV OF/CT	89	535			1	931	15	579	17	598	39	336	17	424
CENTENARY COLL/LA	89	536	11	430	15	414	16	576	17	611	22	508	8	669
BLOOMSBURG U OF PA	88	537	9	470	8	552	21	474	17	599	13	631	20	386
SHIPPENSBURG U OF PA	88	538	3	718	11	478	16	561	16	621	19	539	23	360
OKLAHOMA BAPT UNIV	88	539	10	460	22	319	19	528	18	594	16	581	3	931
SUNY COLL BUFFALO	87	540	5	600	4	717	8	723	23	518	32	391	15	454
ST JOSEPHS COLL/IN	87	541	12	399	16	393	23	452	21	545	8	760	7	666
MILLIKIN UNIV/IL	87	542	16	334	14	424	19	518	15	645	14	615	9	591
ROANOKE COLLEGE/VA	87	543	11	427	8	571	13	627	23	527	19	544	13	506
CENTRAL ARKANSAS, U	87	544	13	386	12	473	12	652	18	592	18	556	14	485
CALIF UNIV OF PENN	86	545	3	711	4	720	23	449	28	470	20	528	8	622
NE MISSOURI STATE U	86	546	5	612	6	639	20	502	26	493	19	542	10	564
KEARNEY ST COLL/NE	86	547	10	447	10	509	18	536	19	570	16	578	13	503
HAMPTON UNIV/VA	86	548	8	509	7	607	19	524	25	506	22	501	5	768
BETHEL COLL/KS	85	549	11	426	16	398	26	422	14	666	13	639	5	767
AUSTIN PEAY ST U/TN	85	550	6	583	6	656	20	507	30	461	13	644	10	571
SAMFORD UNIV/AL	85	551	16	340	9	541	18	539	19	577	18	555	5	782
TRINITY COLLEGE/DC	84	552	7	542	9	532	20	504	32	443	15	594	1	1156
MORAVIAN COLLEGE/PA	83	553	10	436	8	555	12	643	27	481	13	633	13	496
HAMPDEN-SYDNEY C/VA	83	554	10	450	6	647	10	687	27	484	18	552	12	523
GUILFORD COLL/NC	83	555	14	365	6	650	16	569	23	528	14	619	10	568
CLARION U OF PA	82	556	3	714	9	525	13	616	20	557	22	496	15	457
NW MISSOURI STATE U	82	557	4	659	20	340	16	567	21	547	15	591	6	716
FLORIDA SOUTHERN C	82	558	12	407	13	448	17	552	16	629	13	643	11	540
MARYVILLE COLLEGE/TN	82	559	14	339	13	452	14	606	19	575	12	670	8	646
WHITWORTH COLL/WA	82	560	9	491	10	519	21	491	15	656	13	652	14	493

SOURCE: NATIONAL RESEARCH COUNCIL'S SURVEY OF EARNED DOCTORATES

00174

APPENDIX A

NUMBER OF BACCALAUREATES WHO EARNED S/E PHDS BY BA INSTITUTION & YEAR OF BACCALAUREATE

INSTITUTION NAME	TOTAL N	TOTAL RANK	1950-54 N	1950-54 RANK	1955-59 N	1955-59 RANK	1960-64 N	1960-64 RANK	1965-69 N	1965-69 RANK	1970-74 N	1970-74 RANK	1975-79 N	1975-79 RANK
ELIZABETHTOWN C/PA	81	561	6	559	10	503	13	618	28	471	19	538	5	745
WASHINGTON COLL/MD	81	562	5	615	9	531	15	587	22	539	13	640	17	428
SOUTHWESTERN U/TX	81	563	6	590	9	544	20	511	18	595	14	625	14	489
SPRINGFIELD COLL/MA	80	564	14	356	7	590	18	532	24	512	10	697	7	658
SOUTHRN CONN ST UNIV	80	565	1	857	1	934	10	678	24	513	24	469	20	383
SUNY COLL POTSDAM	80	566	1	867	4	719	4	868	12	694	33	383	26	331
RANDOLPH-MACN WOM/VA	80	567	5	620	7	608	10	688	23	526	22	502	13	505
MARYLAND,U-BALT CNTY	79	568							1	1207	37	355	41	245
BRIDGEWATER COLL/VA	79	569	5	616	14	427	17	550	21	548	16	579	6	719
MCNEESE STATE U/LA	79	570	1	951	14	429	20	509	16	633	23	489	5	786
TRENTON ST COLL/NJ	78	571	1	873	3	779	16	559	13	679	24	470	21	375
SLIPPERY ROCK U/PA	78	572	3	719	2	856	11	660	18	584	26	446	18	411
MARY WASHINGTON C/VA	78	573	5	619	5	690	7	772	19	572	29	415	13	504
KUTZTOWN UNIV/PA	77	574	8	499	8	554	12	641	17	600	23	479	9	586
ST AMBROSE COLL/IA	77	575	12	400	11	488	20	501	18	586	10	706	6	714
CENTRAL METH COLL/MO	77	576	12	402	16	396	29	400	10	757	7	789	3	898
U S INTERNATL U/CA	77	577			4	764	11	676	23	533	23	494	16	446
HAMPSHIRE COLL/MA	76	578									19	535	57	173
STONEHILL COLLEGE/MA	76	579	3	701	3	770	14	594	23	516	15	585	18	408
WESTMONT COLLEGE/CA	76	580	4	698	4	765	18	542	16	636	27	442	7	694
WHEATON COLLEGE/MA	75	581	4	639	4	710	13	613	21	544	21	510	12	514
MANHATTANVILLE C/NY	75	582	4	642	6	624	16	557	15	638	26	444	8	617
SUSQUEHANNA UNIV/PA	75	583	6	561	7	597	14	599	16	622	18	550	14	473
CARTHAGE COLL/WI	75	584	5	606	12	467	16	565	14	664	15	589	13	499
NC CENTRAL UNIV	75	585	9	487	10	512	13	630	21	549	14	620	8	641
GEORGIA SOUTHERN C	75	586	6	582	4	752	17	551	19	574	15	600	14	482
OUACHITA BAPT U/AR	75	587	7	548	7	617	10	693	27	488	13	648	11	544
PACIFIC UNION C/CA	75	588	11	433	5	706	19	531	22	542	8	779	10	574
MT ST MARYS COLL/MD	74	589	8	508	6	646	19	523	11	726	26	452	4	827
WHEELING COLLEGE/WV	74	590			2	884	20	506	28	476	15	596	9	598
STHRN NAZARENE U/OK	73	591	11	431	8	579	18	540	18	593	14	623	4	848
NOWESTERN OKLA ST U	73	592	4	687	11	495	23	459	16	634	8	771	11	546
ESTRN NAZARENE C/MA	72	593	8	494	9	522	17	544	17	597	10	694	11	527
BEMIDJI STATE U/MN	72	594	5	609	3	797	18	534	19	568	13	637	14	476
POINT LOMA NAZA C/CA	72	595	5	636	10	520	12	655	12	692	22	509	10	575
LYNCHBURG COLLEGE/VA	71	596	5	618	9	533	19	525	18	588	11	683	9	597
AGNES SCOTT COLL/GA	71	597	6	581	7	612	22	470	17	609	10	712	9	602
NOEASTERN OKLA ST U	71	598	3	762	8	580	17	554	31	452	7	804	5	787
DALLAS, UNIV OF/TX	71	599					8	748	23	530	29	418	11	547
MILLS COLLEGE/CA	71	600	3	768	2	911	19	530	14	676	25	468	8	655

SOURCE: NATIONAL RESEARCH COUNCIL'S SURVEY OF EARNED DOCTORATES

000175

APPENDIX A

NUMBER OF BACCALAUREATES WHO EARNED S/E PHDS BY BA INSTITUTION & YEAR OF BACCALAUREATE

INSTITUTION NAME	TOTAL N	TOTAL RANK	1950-54 N	1950-54 RANK	1955-59 N	1955-59 RANK	1960-64 N	1960-64 RANK	1965-69 N	1965-69 RANK	1970-74 N	1970-74 RANK	1975-79 N	1975-79 RANK
PEPPERDINE UNIV/CA	71	601	10	464	9	548	15	592	23	532	6	860	8	656
WAYNESBURG COLL/PA	70	602	9	472	17	376	15	582	11	719	14	612	4	807
UNIV NORTH ALABAMA	70	603	7	547	10	513	16	574	17	610	11	687	9	605
NEW ROCHELLE, COLL	69	604	6	557	12	462	14	596	20	556	13	629	4	801
LEWIS UNIVERSITY/IL	69	605			2	862	12	647	23	524	23	482	9	590
AQUINAS COLLEGE/MI	69	606	7	535	11	485	21	480	20	559	5	878	5	758
ST THOMAS, U OF/TX	69	607	1	957	5	704	15	590	28	478	13	649	7	691
INDIANA INST OF TECH	68	608	6	564	13	440	15	584	17	603	11	676	6	708
WISCONSIN,U-SUPERIOR	68	609	10	442	13	442	13	623	17	606	10	705	5	761
GEORGE MASON U/VA	68	610							5	930	27	438	36	269
FLORIDA AG & MECH U	68	611	7	544	13	449	18	538	12	705	16	580	2	1013
DELTA STATE UNIV/MS	68	612	3	756	7	615	14	607	21	553	17	569	6	727
CARROLL COLLEGE/MT	68	613		979	11	497	21	490	11	739	13	650	3	933
CUNY-BERNRD BARUCH C	67	614	2	776			9	697	25	500	23	477	8	616
RIDER COLLEGE/NJ	67	615			2	852	5	829	16	620	32	392	12	517
MUNDELEIN COLLEGE/IL	67	616	8	502	6	633	23	453	21	546	6	828	3	891
WESTMINSTER COLL/MO	67	617	4	660	8	565	18	535	18	587	12	662	7	672
ASBURY COLLEGE/KY	67	618	5	624	13	450	23	458	12	706	8	767	6	726
TEXAS LUTHERAN COLL	67	619	8	524	8	582	8	749	11	738	21	523	11	550
SOUTHERN COLO, UNIV	67	620							25	510	28	430	14	491
KING COLLEGE/TN	66	621	13	384	6	657	21	487	15	655	6	855	5	778
TENNESSEE STATE UNIV	66	622	7	546	13	453	12	650	12	707	15	601	7	685
REGIS COLLEGE/CO	66	623	15	352	6	665	14	610	18	596	9	749	4	854
CHATHAM COLLEGE/PA	65	624	3	713	3	781	15	581	23	520	16	574	5	743
ROCKFORD COLLEGE/IL	65	625	2	792	7	600	20	498	19	566	12	660	5	756
BETHEL COLLEGE/MN	65	626			4	733	13	624	22	538	13	638	13	501
SIMPSON COLLEGE/IA	65	627	10	445	8	564	21	481	16	625	4	935	6	715
ST JOHNS COLLEGE/MD	64	628	9	483	5	688	10	686	19	571	15	593	6	718
MCMURRAY COLLEGE/TX	64	629	2	837	9	543	13	634	25	509	9	748	6	729
MONMOUTH COLLEGE/NJ	63	630			1	945	20	494	15	640	14	609	13	494
OTTAWA UNIVERSITY/KS	63	631	5	614	15	410	14	603	15	649	12	663	2	985
WEST LIBERTY ST C/WV	63	632	6	576	7	610	21	485	19	573	5	886	5	770
NEW SCH SOC RSCH/NY	62	633	13	374	8	549	13	615	11	714	13	630	4	802
TAYLOR UNIVERSITY/IN	62	634	3	725	3	791	30	386	12	699	10	703	4	812
QUINCY COLLEGE/IL	62	635	4	655	7	599	9	706	17	605	17	561	8	629
WSTRN CAROLINA U/NC	62	636	1	932	9	536	15	588	16	628	12	665	9	599
E STROUDSBURG U/PA	61	637	4	618	4	721	13	617	10	750	14	610	16	437
SOUTHWESTERN COLL/KS	61	638	9	480	8	568	20	503	10	760	6	839	8	637
COLUMBIA UNION C/MD	61	639	4	665	10	510	19	522	16	627	9	738	3	905
ESTRN MENNONITE C/VA	61	640	5	617	8	570	18	537	14	668	7	791	9	596

SOURCE: NATIONAL RESEARCH COUNCIL'S SURVEY OF EARNED DOCTORATES

000476

APPENDIX A

NUMBER OF BACCALAUREATES WHO EARNED S/E PHDS BY BA INSTITUTION & YEAR OF BACCALAUREATE

INSTITUTION NAME	TOTAL N	TOTAL RANK	1950-54 N	1950-54 RANK	1955-59 N	1955-59 RANK	1960-64 N	1960-64 RANK	1965-69 N	1965-69 RANK	1970-74 N	1970-74 RANK	1975-79 N	1975-79 RANK
BOB JONES UNIV/SC	61	641	10	453	8	572	13	631	8	821	11	685	11	539
BRIDGEWATER ST C/MA	60	642	4	638	3	767	9	695	20	555	13	628	11	528
MT ST VINCENT,COL/NY	6	643	5	598	4	712	11	657	18	583	14	606	8	618
WM PATERSON C OF NJ	60	644					8	726	8	807	29	411	15	456
WIDENER UNIV/PA	60	645	2	788	1	960	12	644	20	558	14	613	11	531
GRAND VALLEY ST C/MI	60	646							11	722	33	385	16	440
BERRY COLLEGE/GA	60	647	13	382	9	537	9	715	18	590	4	948	7	681
MOREHEAD STATE U/KY	60	648	4	676	6	655	10	692	23	529	12	669	5	775
BAKER UNIV/KS	59	649	9	478	13	444	11	665	15	648	6	838	5	765
JAMES MADISON U/VA	59	650	4	668	6	648	4	890	6	880	15	595	24	355
JACKSONVILLE UNIV/FL	59	651					14	605	16	630	23	486	6	725
SOUTH ALABAMA, U	59	652							13	688	27	441	19	406
HARDIN-SIMMONS U/TX	59	653	12	410	11	496	22	471	8	828	6	858		
STHRN ORE ST COLL	59	654	1	968	3	831	6	816	17	614	21	525	11	552
CAL ST U,S BERNRDINO	59	655							6	898	35	371	18	421
SUFFOLK UNIV/MA	58	656	6	555	7	591	9	696	16	618	10	698	10	554
PACE UNIVERSITY/NY	58	657	3	706	1	940	5	825	10	745	29	410	10	555
LINCOLN UNIV/PA	58	658	14	358	6	628	9	701	11	718	13	632	5	746
ST MARYS COLLEGE/IN	58	659	3	724	4	728	12	646	15	643	14	614	10	557
PRINCIPIA COLLEGE/IL	58	660	9	474	13	441	13	622	12	700	5	877	6	710
JAMESTOWN COLLEGE/ND	58	661	12	404	6	642	11	663	13	684	11	681	5	764
CONCORD COLLEGE/WV	58	662	9	485	5	691	14	604	17	608	10	709	3	910
WEST FLORIDA, U OF	58	663							11	730	29	416	18	418
GEORGETOWN COLL/KY	58	664	7	545	14	428	17	553	7	849	9	743	4	843
WESTERN ST COLL COLO	58	665	7	551	6	666	19	529	12	710	8	775	6	732
ASSUMPTION COLL/MA	57	666	2	772	4	707	11	656	13	677	18	548	9	577
SYRACUSE U-UTICA/NY	57	667	1	868	2	850	5	826	24	514	17	559	8	620
HOLLINS COLLEGE/VA	57	668	2	808	5	689	8	736	11	727	21	518	10	567
NC, U OF-CHARLOTTE	57	669					1	1122	10	766	25	462	21	378
NORTH GEORGIA COLL	57	670	10	455	4	753	8	739	20	560	9	742	6	723
ST. EDWARD'S U/TX	57	671	5	631	10	517	13	635	17	613	8	772	4	851
WINONA STATE UNIV/MN	56	672	3	739	4	734	14	602	12	703	9	733	14	478
WESTMAR COLLEGE/IA	56	673	6	568	7	603	21	483	13	682	7	788	2	972
VIRGINIA STATE UNIV	56	674	8	510	12	470	13	628	8	818	10	708	5	769
BENNINGTON COLL/VT	55	675			7	588	12	638	16	616	14	604	6	698
REGIS COLLEGE/MA	55	676			5	670	15	578	16	617	16	572	3	863
US MERCHANT MAR ACAD	55	677	14	357	9	524	14	598	10	748	5	867	3	875
CHESTNUT HILL C/PA	55	678	5	601	5	678	10	682	14	659	16	575	5	744
CONCORDIA COLLEGE/IL	55	679	8	501	11	482	14	600	17	604	4	923	1	1112
EMORY & HENRY C/VA	55	680	4	667	7	606	16	568	15	650	7	792	6	720

SOURCE: NATIONAL RESEARCH COUNCIL'S SURVEY OF EARNED DOCTORATES

000177

APPENDIX A

NUMBER OF BACCALAUREATES WHO EARNED S/E PHDS BY BA INSTITUTION & YEAR OF BACCALAUREATE

INSTITUTION NAME	TOTAL N	TOTAL RANK	1950-54 N	1950-54 RANK	1955-59 N	1955-59 RANK	1960-64 N	1960-64 RANK	1965-69 N	1965-69 RANK	1970-74 N	1970-74 RANK	1975-79 N	1975-79 RANK
ARKANSAS TECH UNIV	55	681	2	830	5	701	13	632	16	631	14	622	5	784
MARYMOUNT COLLEGE/NY	54	682	2	778	9	523	13	614	10	744	15	586	5	741
WILSON COLLEGE/PA	54	683	10	427	6	631	9	703	12	696	13	634	4	808
ANDERSON COLLEGE/IN	54	684	3	722	10	507	8	728	15	642	10	702	8	625
N PARK C&THEOL S/IL	54	685					21	479	19	565	10	704	4	814
EAST CENTRAL UNIV/OK	54	686	4	686	12	474	13	633	13	690	9	745	3	930
SOUTHESTRN OKLA ST U	54	687	7	549	7	620	14	609	10	770	10	719	6	728
CENTRAL STATE U/OH	53	688	4	652	10	505	13	620	14	663	10	701	2	955
TRI-STATE UNIV/IN	53	689	3	726	17	377	16	563	8	810	6	826	3	890
CHARLESTON, U OF/WV	53	690	16	337	6	649	10	689	14	670	6	847	1	1161
JACKSONVILLE ST U/AL	53	691	6	587	7	614	9	716	11	733	13	646	7	686
MISS UNIV WOMEN	53	692	3	757	3	823	9	718	19	579	10	717	9	606
TOUGALOO COLLEGE/MS	53	693	8	519	9	542	8	745	14	673	10	718	4	847
ADAMS STATE COLL/CO	53	694			3	828	22	472	19	580	3	1035	6	731
NORWICH UNIV/VT	52	695	7	526	2	838	15	577	18	582	6	812	4	796
GREENVILLE COLL/IL	52	696	5	605	8	557	15	585	15	644	4	925	5	753
FERRIS ST COLL/MI	52	697	3	731	7	601	14	601	15	647	4	929	9	592
IOWA WESLEYAN COLL	52	698	10	444	1	988	19	520	16	624	2	1079	4	817
TRANSYLVANIA U/KY	52	699	3	755	8	576	11	670	11	731	14	621	5	776
TROY STATE UNIV/AL	52	700	8	517	5	700	12	651	9	798	13	647	5	783
NICHOLLS STATE U/LA	52	701			1	1027	6	812	11	735	20	533	14	486
CAL ST U STANISLAUS	52	702							6	899	28	431	18	422
LOCK HAVEN UNIV/PA	51	703	2	784	2	855	9	702	14	661	15	587	9	587
SETON HILL COLL/PA	51	704	4	650	12	464	11	659	12	695	7	784	5	750
FROSTBURG ST COLL/MD	51	705	2	806			4	889	14	667	15	592	16	442
CATAWBA COLLEGE/NC	51	706	6	577	4	744	13	629	14	671	11	684	3	913
WILMINGTON COLL/OH	50	707	8	500	4	725	16	562	15	641	4	920	3	886
ILLINOIS COLLEGE	50	708	9	473	8	558	8	731	9	784	11	677	5	754
NW NAZARENE COLL/ID	50	709	1	961	8	584	12	654	12	709	8	774	9	612
CAL ST UNIV-CARSON	50	710							7	856	26	455	17	433
PITZER COLLEGE/CA	50	711							8	829	25	467	17	434
GORDON COLLEGE/MA	49	712	7	527	5	669	10	677	14	657	6	813	7	657
MANSFIELD UNIV/PA	49	713	6	560	3	782	7	759	14	662	14	611	5	747
MCPHERSON COLLEGE/KS	49	714	9	479	8	567	15	586	11	725	4	943	2	983
PFEIFFER COLLEGE/NC	49	715			4	745	11	668	15	652	10	711	9	600
FLORIDA INST TECH	49	716							5	939	17	568	27	326
MONTEVALLO, U OF/AL	49	717			2	897	16	575	19	576	10	716	2	1024
FT LEWIS COLLEGE/CO	49	718					9	722	14	674	17	570	9	613
CUNY-STATEN ISLAND,C	48	719							6	859	35	364	7	660
LENOIR-RHYNE COLL/NC	48	720	6	578	7	611	16	570	7	844	5	889	7	679

SOURCE: NATIONAL RESEARCH COUNCIL'S SURVEY OF EARNED DOCTORATES

00078

APPENDIX A

NUMBER OF BACCALAUREATES WHO EARNED S/E PHDS BY BA INSTITUTION & YEAR OF BACCALAUREATE

INSTITUTION NAME	TOTAL N	TOTAL RANK	1950-54 N	1950-54 RANK	1955-59 N	1955-59 RANK	1960-64 N	1960-64 RANK	1965-69 N	1965-69 RANK	1970-74 N	1970-74 RANK	1975-79 N	1975-79 RANK
CHRISTN BROTHRS C/TN	48	721			2	894	16	572	21	552	7	799	2	1018
UNION UNIVERSITY/TN	48	722	8	515	8	577	8	743	12	708	7	801	5	780
HUNTINGDON COLL/AL	48	723	6	586	10	514	11	671	13	687	3	1023	5	781
TEXAS SOUTHERN UNIV	48	724	6	591	8	583	11	673	10	771	5	907	8	652
WELLS COLLEGE/NY	47	725	2	783	7	596	5	827	6	860	20	527	7	663
XAVIER UNIV/LA	47	726	10	459	11	494	11	672	5	945	7	803	3	929
CHAPMAN COLLEGE/CA	47	727	1	972	1	1043	6	818	10	774	20	534	9	615
RHODE ISLAND COLLEGE	46	728	3	702	3	771	4	865	12	693	8	752	16	435
ALBERTUS MAGNUS C/CT	46	729	4	640	5	672	6	790	16	619	11	674	4	799
ELMIRA COLLEGE/NY	46	730			1	937	7	755	14	658	21	513	3	868
DOANE COLLEGE/NE	46	731	12	406	9	528	7	769	10	759	4	940	4	821
WAYNE ST COLL/NE	46	732	6	571	7	605	22	468	6	879	3	1000	2	982
TABOR COLLEGE/KS	46	733	8	507	9	530	13	626	8	816	6	840	2	987
ST CATHERINE,C OF/MN	45	734	8	504	9	527	12	648	5	918	3	992	8	633
GEO PEABODY COL/TN	45	735	12	409	11	491	5	853	9	796	5	901	3	924
UNION COLLEGE/NE	44	736	10	448	12	469	7	770	9	789	4	942	2	981
ARKANSAS,U-MONTICELO	44	737	8	520	6	659	14	608	5	944	3	1027	8	648
US COAST GUARD ACAD	43	738	9	467	12	459	12	639	9	776	1	1146		
ASHLAND COLLEGE/OH	43	739	3	720	3	784	12	645	8	809	11	675	6	706
CONCORDIA THEO SM/IN	43	740	1	890	8	556	15	583	10	753	8	759	1	1105
MORNINGSIDE COLL/IA	43	741	8	505	4	736	6	800	10	756	8	763	7	670
ST MARYS SEM & U/MD	43	742	6	574	3	810	17	549	10	761	6	843	1	1154
AUGUSTA COLLEGE/GA	43	743							14	672	19	546	10	570
HENDERSON ST U/ARK	43	744	3	759	7	616	8	746	9	799	9	744	7	688
PRAIRIE VIEW A&M/TX	43	745	7	550	9	545	15	591	9	802	3	1033		
N MEXICO HIGHLANDS U	43	746	3	765	9	546	14	611	11	740	4	959	2	1038
KEAN COLL NEW JERSEY	42	747			1	946	1	1063	10	749	16	573	14	471
INDIANA CENTRAL UNIV	42	748	6	563	4	726	13	621	9	782	7	787	3	888
OLIVET NAZARENE C/IL	42	749	3	728	7	598	7	761	11	721	4	927	10	558
WISC, U-GREEN BAY	42	750									23	483	19	402
ALCORN STATE U/MS	42	751	4	682	2	898	7	783	19	578	8	769	2	1025
JACKSON STATE U/MS	42	752	4	683	2	900	4	903	11	734	11	688	10	572
SUL ROSS STATE U/TX	42	753	4	690	7	621	13	636	7	853	10	720	1	1208
METROPOLITAN ST C/CO	42	754							1	1239	19	547	22	373
I AMER U-SAN GERM/PR	42	755	5	637	6	668	6	819	16	637	7	811	2	1049
ROSEMONT COLLEGE/PA	41	756	2	786	1	958	13	619	13	680	7	783	5	749
ADRIAN COLLEGE/MI	41	757	4	656	2	864	3	932	13	681	14	616	5	757
KANSAS WESLEYAN	41	758	4	664	4	740	11	666	7	843	8	765	7	674
FAIRMONT STATE C/WV	41	759	2	811	5	692	7	774	14	669	10	710	3	911
CLARK COLLEGE/GA	41	760	3	752	9	538	7	778	10	767	12	667		

SOURCE: NATIONAL RESEARCH COUNCIL'S SURVEY OF EARNED DOCTORATES

00179

APPENDIX A

NUMBER OF BACCALAUREATES WHO EARNED S/E PHDS BY BA INSTITUTION & YEAR OF BACCALAUREATE

INSTITUTION NAME	TOTAL N	TOTAL RANK	1950-54 N	1950-54 RANK	1955-59 N	1955-59 RANK	1960-64 N	1960-64 RANK	1965-69 N	1965-69 RANK	1970-74 N	1970-74 RANK	1975-79 N	1975-79 RANK
LOUISIANA COLLEGE	41	761	5	626	10	515	12	653	6	894	5	903	3	928
NAZARETH C ROCHTR/NY	40	762	1	861	7	594	10	679	13	678	6	816	3	870
FLORIDA INTERNAT'L U	40	763									11	686	29	311
ST XAVIER COLLEGE/IL	39	764	2	794	5	683	7	763	15	646	8	762	2	963
GEORGIA COLLEGE	39	765	5	623	6	653	2	1022	3	1038	10	714	13	508
TAMPA, UNIV OF/FL	39	766	3	753	8	575	8	741	6	890	7	798	7	684
OKLAHOMA PANHND ST U	39	767	4	688	13	554	9	721	9	800	4	956		
HOWARD PAYNE UNIV	39	768	4	689	1	1029	17	555	4	995	5	906	8	651
ST JOSEPHS COLL/NY	38	769	4	644	4	713	9	698	5	907	10	699	6	702
NOTRE DAME COLL/OH	38	770	2	790	5	680	5	832	17	601	7	785	2	956
FRANKLIN C INDIANA	38	771	6	562	3	789	8	729	10	754	6	825	5	752
NORTHEASTERN ILL U	38	772			1	976	2	991	3	1018	16	577	16	439
GRACELAND COLL/IA	38	773			2	873	4	879	5	920	17	563	10	561
STERLING COLLEGE/KS	38	774	6	573	8	569	9	711	10	761	4	944	1	1152
HOOD COLLEGE/MD	38	775	2	807	1	996	8	735	10	762	9	739	8	638
WINTHROP COLLEGE/SC	38	776	3	751	4	750	10	691	8	822	12	666	1	1177
ARKANSAS, U-PINE BLU	38	777	5	625	5	702	9	720	16	632	3	1028		
INCARNATE WORD C/TX	38	778	2	835	4	761	7	786	11	737	9	747	5	788
EVERGREEN ST COLL/WA	38	779									7	808	31	297
LOMA LINDA UNIV/CA	38	780	4	697	2	910	8	752	5	950	8	778	11	553
MARYMNT MNHTTN C/NY	37	781			5	673	6	793	11	713	12	657	3	869
WEBB I NAVAL ARCH/NY	37	782	2	782	8	551	16	558	8	806	2	1060	1	1081
EASTERN COLLEGE/PA	37	783			2	854	8	727	11	717	8	756	8	623
BLUFFTON COLLEGE/OH	37	784	4	651	6	632	10	683	6	868	5	874	6	707
MILWAUKEE SCH ENGR	37	785	7	536	7	602	9	707	12	702	2	1076		
DUBUQUE, UNIV OF/IA	37	786	9	477	4	735	13	625	5	919	4	933	2	970
WEST VA INST OF TECH	37	787	2	813	2	883	9	714	11	729	9	740	4	833
WEST VIRGINIA ST C	37	788	5	622	4	743	11	667	9	791	6	848	2	995
VALDOSTA STATE C/GA	37	789	2	821	2	893	4	898	9	794	12	668	8	644
ALABAMA AG&MECH U	37	790	1	949	3	822	8	744	13	686	8	768	4	845
SAN DIEGO,UNIV OF/CA	37	791			2	914	5	859	9	805	15	603	6	736
MARYWOOD COLLEGE/PA	36	792	2	785	3	783	4	870	10	751	16	576	1	1093
STEUBENVILLE,U OF/OH	36	793	3	721	3	787	9	704	12	697	7	786	2	958
CHADRON ST COLL/NE	36	794	4	662	7	604	7	768	7	840	9	737	2	980
DANA COLLEGE/NE	36	795	7	540	3	806	9	710	7	842	3	999	7	673
PRESBYTERIAN COLL/SC	36	796	2	818	4	749	7	777	15	654	7	796	1	1174
OGLETHORPE UNIV/GA	36	797	4	673	6	654	11	669	8	824	5	894	2	1011
SOUTHERN COL/TN	36	798	4	680	6	658	8	742	8	825	5	899	5	779
MONT C MINRL SC&TECH	36	799	5	632	11	498	8	750	7	855	2	1111	3	934
BOISE STATE UNIV/ID	36	800							4	997	14	626	18	420

SOURCE: NATIONAL RESEARCH COUNCIL'S SURVEY OF EARNED DOCTORATES

000180

APPENDIX A

NUMBER OF BACCALAUREATES WHO EARNED S/E PHDS BY BA INSTITUTION & YEAR OF BACCALAUREATE

INSTITUTION NAME	TOTAL N	TOTAL RANK	1950-54 N	1950-54 RANK	1955-59 N	1955-59 RANK	1960-64 N	1960-64 RANK	1965-69 N	1965-69 RANK	1970-74 N	1970-74 RANK	1975-79 N	1975-79 RANK
GODDARD COLLEGE/VT	35	801	2	770	2	837	2	970	10	742	13	627	6	699
OHIO DOMINICAN COLL	35	802	7	532	3	786	4	873	11	720	8	758	2	957
PARKS,ST LOUIS U/IL	35	803	3	729	8	560	17	548	5	916	2	1071		
ST LOUIS C PHARM/MO	35	804	6	570	6	640	10	685	9	786	1	1204	3	901
TARKIO COLLEGE/MO	35	805	5	613	2	877	9	709	11	724	2	1083	6	717
SWEET BRIAR COLL/VA	35	806	1	926	4	741	6	804	13	685	5	884	6	721
DAVIS & ELKINS C/WV	35	807	6	575	9	534	7	773	6	883	5	885	2	994
SPELMAN COLLEGE/GA	35	808	2	820	1	1015	8	740	7	848	10	715	7	683
SOUTHERN ARKANSAS U	35	809	2	832	7	618	4	905	13	689	7	802	2	1028
DILLARD UNIV/LA	35	810	2	833	7	619	8	747	7	851	8	770	3	927
LA VERNE, UNIV OF/CA	35	811	2	839	2	909	11	675	7	857	7	809	6	735
SALEM STATE COLL/MA	34	812	1	849	1	927	1	1052	10	743	12	655	9	579
DYOUVILLE COLLEGE/NY	34	813	4	641	4	711	5	791	11	712	6	814	3	867
MARYGROVE COLLEGE/MI	34	814	9	475	6	634	6	798	8	811	3	988	2	964
FRIENDS UNIV/KS	34	815	7	541	8	566	5	846	5	927	5	881	4	824
SHEPHERD COLLEGE/WV	34	816	2	812	7	609	8	737	9	790	7	794	1	1162
SO CAROLINA STATE C	34	817	6	580	5	695	5	848	7	846	7	797	4	839
FT VALLEY ST COLL/GA	34	818	4	672	4	751	4	895	7	847	10	713	5	774
OUR LADY LAKE UN/TX	34	819	3	764	5	703	6	813	9	801	7	806	4	850
MT ST MARYS COLL/CA	34	820	7	552	8	587	8	753	7	858	4	962		
CATHED C IM CONCP/NY	33	821	2	775	11	477	5	821	9	777	5	864	1	1070
RUSSELL SAGE COLL/NY	33	822	2	779	2	846	6	794	10	746	6	817	7	662
CULVER-STOCKTON C/MO	33	823	2	798	5	686	11	662	13	683	1	1200	1	1140
WEBSTER UNIV/MO	33	824	3	743	6	641	5	842	8	814	9	735	2	975
NORTHERN ST COLL/SD	33	825	3	746	6	644	6	801	10	758	7	790	1	1147
CONCORDIA TCHRS C/NE	33	826	2	803	4	739	11	664	7	841	6	837	3	904
WEST GEORGIA COLLEGE	33	827					2	1026	12	704	13	642	6	724
PAN AMERICAN UNIV/TX	33	828	1	955	1	1030	7	787	3	1052	14	624	7	690
ST MARTINS COLL/WA	33	829	4	693	4	762	6	815	10	772	8	776	1	1220
NORTHROP UNIV/CA	33	830	1	975			10	694	13	691	7	810	2	1043
STHRN ME U/PORTLAND	32	831	1	842			2	967	3	1004	11	673	15	447
ATLANTIC UNION C/MA	32	832	1	845	7	589	6	788	7	831	9	723	2	944
PHIL C TEXTIL&SCI/PA	32	833	1	881	4	722	3	928	6	867	10	700	8	624
MIDLAND LTHRN C/NE	32	834	2	804	3	807	6	802	9	788	8	764	4	822
BETHANY COLL/KS	32	835	6	572	6	645	7	771	5	926	3	1001	5	766
TALLADEGA COLLEGE/AL	32	836	8	516	8	578	9	717	3	1044	4	953		
DAEMEN COLLEGE/NY	31	837			2	851	8	724	9	779	9	727	3	876
GLASSBORO ST COLL/NJ	31	838	1	871			2	982	6	861	7	782	15	455
IMMACULATA COLL/PA	31	839	3	717	6	627	4	758	9	780	3	975	3	879
MT ST JOS ON OHIO, C	31	840	4	653	3	785	6	797	9	781	6	823	3	884

SOURCE: NATIONAL RESEARCH COUNCIL'S SURVEY OF EARNED DOCTORATES

000131

APPENDIX A

NUMBER OF BACCALAUREATES WHO EARNED S/E PHDS BY BA INSTITUTION & YEAR OF BACCALAUREATE

INSTITUTION NAME	TOTAL N	TOTAL RANK	1950-54 N	1950-54 RANK	1955-59 N	1955-59 RANK	1960-64 N	1960-64 RANK	1965-69 N	1965-69 RANK	1970-74 N	1970-74 RANK	1975-79 N	1975-79 RANK
ST TERESA, C OF/MN	31	841	2	796	5	685	6	799	11	723	4	932	3	896
BUENA VISTA COLL/IA	31	842	1	912	3	799	7	765	14	665	3	994	3	897
VIRGINIA UNION UNIV	31	843	8	511	4	742	9	713	8	819			2	993
ALDERSN BROADUS C/WV	31	844	4	670	3	813	4	891	10	765	7	793	3	909
NC, U OF-WILMINGTON	31	845							6	887	8	766	17	429
ERSKINE COLLEGE/SC	31	846			5	694	7	776	9	793	6	851	4	837

SOURCE: NATIONAL RESEARCH COUNCIL'S SURVEY OF EARNED DOCTORATES

000182

APPENDIX B

B.A. to Ph.D. Productivity Ratios by Baccalaureate Institutions
(Adjusted for Institution Size)

Note: Baccalaureate institutions with productivity ratios less than 0.1 percent were not reported in Appendix B.

000183

APPENDIX B

BA TO PHD PRODUCTIVITY RATIOS BY BA INSTITUTION AND YEAR OF BACCALAUREATE

BA TO PHD OUTPUT RANK	INSTITUTION	TOTAL PRODUCTIVITY RATIO	1950	1955	1960	1965	1970	1975
			%	%	%	%	%	%
32	CAL INST TECHNOLOGY	44.3	29.6	35.2	57.4	60.7	42.6	43.2
207	HARVEY MUDD COLL/CA	30.6				37.0	47.5	26.0
2	MASS INST TECHNOLOGY	21.3	13.9	15.7	32.3	32.6	19.1	16.8
104	REED COLLEGE/OR	20.7	16.4	16.9	36.4	32.9	14.9	14.4
78	SWARTHMORE COLL/PA	17.1	18.3	14.0	26.2	22.9	15.1	9.5
146	COOPER UNION/NY	13.7	14.5	13.8	37.6	15.5	6.1	8.7
23	CHICAGO, UNIV OF/IL	13.5	20.1	6.6	9.6	21.5	13.7	13.2
154	RADCLIFFE C/MA	13.4	4.8	4.2	8.9			
51	RICE UNIVERSITY/TX	12.0	8.7	6.2	15.5	18.3	16.3	7.1
179	HAVERFORD COLL/PA	11.7	8.9	10.5	9.5	17.8	12.4	11.8
453	NEW COLL-SOUTH FLA U	11.6					5.3	14.2
111	CARLETON COLLEGE/MN	11.0	7.8	5.7	15.4	14.1	10.3	10.1
108	POMONA COLLEGE/CA	10.2	7.4	6.8	14.2	11.9	11.5	8.8
159	GRINNELL COLLEGE/IA	9.9	6.8	8.8	8.6	15.3	14.8	6.2
50	OBERLIN COLLEGE/OH	9.7	8.7	11.1	10.4	14.3	11.5	4.2
112	CALIF, U-SAN DIEGO	9.4					14.9	7.5
131	ANTIOCH COLLEGE/OH	9.4	10.3	17.6	10.6	18.9	7.0	3.9
5	CORNELL UNIV/NY	9.3	6.8	6.3	9.8	12.9	7.7	12.7
389	N MEX I MINING&TECH	9.2	3.4	20.0	10.8	17.9	7.9	7.6
28	PRINCETON UNIV/NJ	9.0	6.7	8.6	9.5	14.1	6.4	8.8
140	WESLEYAN UNIV/CT	8.9	11.0	8.9	15.9	8.4	7.9	5.7
222	WABASH COLLEGE/IN	8.9	13.4	10.2	11.5	11.8	5.1	4.4
127	AMHERST COLLEGE/MA	8.6	5.3	7.7	10.8	13.9	8.8	5.7
208	EARLHAM COLLEGE/IN	8.5	5.9	4.5	7.7	11.8		4.0
578	HAMPSHIRE COLL/MA	8.4						8.4
1	CALIF, U-BERKELEY	8.3			8.0	8.5	5.6	3.6
27	RENSSELAER POLY I/NY	8.2	3.7	6.7	12.0	14.9	7.4	8.2
92	POLYTECHNIC UNIV/NY	8.1	3.9	6.2	9.5	17.3	7.9	6.2
212	BRYN MAWR COLL/PA	7.9	13.6	5.4	7.1	9.6	9.2	5.0
89	CALIF,U-RIVERSIDE	7.9			17.6	11.2	7.5	4.3
56	JOHNS HOPKINS U/MD	7.9	5.3	6.2	10.7	10.8	8.5	6.1
106	BRANDEIS UNIV/MA	7.9		4.1	8.4	11.2	9.2	6.0
10	HARVARD UNIV/MA	7.5	6.8	2.6	12.8	12.6	8.0	7.3
628	ST JOHNS COLLEGE/MD	7.2	15.6	10.0	6.5	10.6	6.1	1.4
138	FRNKLN&MARSHAL C/PA	7.2	5.7	6.4	11.2	10.6	6.8	4.3
148	WOOSTER, COLL OF/OH	7.0	5.7	4.1	10.3	10.9	7.5	3.8
202	KALAMAZOO COLLEGE/MI	7.0	5.3	16.7	10.3	5.9	5.0	7.1
24	YALE UNIVERSITY/CT	6.9	6.0	4.3	9.4	8.3	7.7	7.2
49	CARNEGIE-MELLON U/PA	6.8	4.0	3.8	10.0	11.3	6.9	5.4
158	CALIF,U-SANTA CRUZ	6.7					7.5	6.3

000184

APPENDIX B

BA TO PHD PRODUCTIVITY RATIOS BY BA INSTITUTION AND YEAR OF BACCALAUREATE

BA TO PHD OUTPUT RANK	INSTITUTION	TOTAL PRODUCTIVITY RATIO	1950 %	1955 %	1960 %	1965 %	1970 %	1975 %
144	WILLIAMS COLLEGE/MA	6.5	5.1	5.1	6.7	9.0	7.5	5.5
38	BROWN UNIVERSITY/RI	6.5	3.9	2.8	6.5	8.8	9.8	6.5
43	ROCHESTER,UNIV OF/NY	6.5	5.0	7.2	5.3	9.4	6.2	6.1
782	WEBB I NAVAL ARCH/NY	6.4	5.3	10.0	40.0			
293	PHILA C PHARM&SCI/PA	6.4	4.1	3.4	70.6	11.6	5.3	1.9
75	SUNY AT STONY BROOK	6.3				10.7	7.2	5.1
19	STANFORD UNIV/CA	6.3	4.9	3.4	6.8	9.7	6.8	6.3
185	WORCESTER POLY I/MA	6.3	5.2	2.4	6.1	13.1	5.6	4.4
33	CASE WESTRN RSRVE/OH	6.2	3.3	3.0	9.6	12.1	8.5	4.8
205	BOWDOIN COLLEGE/ME	6.2	2.9	6.2	12.1	7.9	7.1	3.4
218	KNOX COLLEGE/IL	6.0	5.8	5.7	6.4	12.1	4.9	2.2
200	STEVENS INST TECH/NJ	5.8	1.0	5.0	6.5	8.3	8.7	3.3
220	DAVIDSON COLLEGE/NC	5.8	2.2	2.9	9 1	8.7	6.4	4.2
8	CALIF,U-LOS ANGELES	5.7			5.6	5.5	4.1	2.9
130	UNION UNIVERSITY/NY	5.7	6.5	4.3	5.1	9.6	4.3	5.0
431	ECKERD COLLEGE/FL	5.7				3.8	6.0	6.6
35	CALIF, U-DAVIS	5.7			11.4	7.1	5.9	3.7
7	CUNY-CITY COLLEGE	5.6	5.7	5.9	8.4	6.8	4.5	1.9
532	BLACKBURN COLLEGE/IL	5.6	15.8	7.4	12.0	7.2	2.6	2.2
245	LAWRENCE UNIV/WI	5.5	3.9	3.5	5.6	8.5	8.0	2.4
67	DARTMOUTH COLLEGE/NH	5.4	4.6	2.8	9.2	7.2	6.0	3.2
261	BATES COLLEGE/ME	5.4	2.4	6.8	6.4	5.8	5.4	5.4
14	COLUMBIA UNIV/NY	5.4	4.3	3.2	7.6	8.8	6.1	4.0
438	DELAWARE VALLEY C/PA	5.4	2.1		10.7	9.8	3.6	4.7
178	CLARK UNIVERSITY/MA	5.3	3.7	4.3	8.5	8.0	5.1	4.0
216	BELOIT COLLEGE/WI	5.3	4.7	4.4	6.0	10.4	4.3	3.1
375	ILL BENEDICTINE COLL	5.3	9.1	10.7		8.8	4.9	3.2
156	OCCIDENTAL COLL/CA	5.2	4.2	3.6	6.1	7.6	6.6	2.8
621	KING COLLEGE/TN	5.2	8.1	4.9	18.2	5.9		2.0
275	JUNIATA COLLEGE/PA	5.2	6.2	3.4	8.9	7.6	3.7	3.7
129	SUNY AT BINGHAMTON	5.2		1.5	11.9	11.5	4.5	3.3
164	LAFAYETTE COLLEGE/PA	5.1	5.3	4.0	6.3	7.8	4.0	3.4
95	ILLINOIS INST TECH	5.1	3.1	4.1	7.3	8.4	6.0	3.8
244	MUHLENBERG COLL/PA	5.1	3.9	6.3	4.2	8.5	3.7	4.8
282	WHITMAN COLLEGE/WA	5.0	4.0	1.9	4.5	12.0	3.5	2.8
150	WELLESLEY COLLEGE/MA	4.9	1.4	3.3	3.6	7.3	5.6	6.7
147	CALIF,U-IRVINE	4.9					6 7	4.2
82	LEHIGH UNIVERSITY/PA	4.8	4.2	4.2	7.3	7.5	3.8	2.8
190	US MILITARY ACADEMY	4.8	4.0				1.7	.7
271	SUNY ENVR SCI FRSTRY	4.8	3.3	2.1	11.5	4.2	5.5	4.6

000135

APPENDIX B

BA TO PHD PRODUCTIVITY RATIOS BY BA INSTITUTION AND YEAR OF BACCALAUREATE

BA TO PHD OUTPUT RANK	INSTITUTION	TOTAL PRODUCTIVITY RATIO	1950 %	1955 %	1960 %	1965 %	1970 %	1975 %
310	RHODES COLLEGE/TN	4.7	3.7	5.4	9.7	6.2	4.1	1.5
677	US MERCHANT MAR ACAD	4.7					1.6	1.0
281	KENYON COLLEGE/OH	4.6	2.2	6.9	6.7	8.8	3.8	2.7
497	BARD COLLEGE/NY	4.6		7.3	10.4	7.0	5.6	2.0
252	HAMILTON COLLEGE/NY	4.6	2.0	4.6	5.6	9.4	7.7	2.6
473	CENTRE COLL KENTUCKY	4.6	2.8	6.2	1.4	6.1	3.9	6.1
57	DUKE UNIVERSITY/NC	4.6	2.2	2.3	3.9	7.1	7.0	4.8
333	LEBANON VALLEY C/PA	4.5	3.8	4.8	2.7	8.5	4.4	3.3
240	COLORADO SCH MINES	4.5	2.6	3.4	7.2	7.0	4.9	2.7
206	HOPE COLLEGE/MI	4.5	7.2	3.1	8.1	7.4	2.0	2.2
280	DREW UNIVERSITY/NJ	4.4	4.0	5.5	3.6	7.2	3.7	3.4
266	BEREA COLLEGE/KY	4.3	4.2	6.7	6.1	6.8	1.9	.8
483	CHARLESTON, C OF/SC	4.3	5.8		9.8	9.1	3.6	2.7
711	PITZER COLLEGE/CA	4.3					5.9	3.1
300	S DAKOTA S MINE&TECH	4.3	4.9	5.5	5.6	5.9	3.3	2.6
191	VASSAR COLLEGE/NY	4.3	3.0	1.8	3.6	3.8	7.1	5.3
21	IOWA STATE UNIV	4.3	5.2	3.9	7.8	7.1	3.0	2.0
204	YESHIVA UNIV/NY	4.2	10.2	5.8	4.7	4.7	2.5	2.0
136	BUCKNELL UNIV/PA	4.2	1.9	1.5	3.2	7.7	4.7	5.0
229	MACALESTER COLL/MN	4.2	2.2	2.1	2.2	6.3	7.6	3.7
358	CORNELL COLLEGE/IA	4.2	2.4	4.0	7.7	8.1	2.2	2.1
45	NOTRE DAME, U OF/IN	4.1	2.4	2.4	5.1	6.7	4.5	3.3
195	COLGATE U/NY	4.1	1.7	3.7	3.6	5.0	6.0	3.9
91	TUFTS UNIVERSITY/MA	4.1	2.2	2.1	4.0	8.9	4.5	3.7
276	DICKINSON COLL/PA	4.1	3.2	1.9	3.4	7.4	5.7	2.4
18	CUNY-BROOKLYN COLL	4.0	5.5	5.9	4.8	5.3	3.9	1.0
633	NEW SCH SOC RSCH/NY	4.0	4.8	26.3			2.0	3.6
125	WILLIAM & MARY, C/VA	4.0	4.4	1.9	5.8	3.8	4.2	4.2
227	TRINITY COLLEGE/CT	4.0	2.8	1.6	4.6	6.8	4.9	3.1
731	DOANE COLLEGE/NE	4.0	11.7	3.2	6.7	8.8		.9
607	ST THOMAS, U OF/TX	4.0			3.3		4.3	.8
444	BELLARMINE COLL/KY	4.0		2.1	3.4	4.4		1.9
6	WISCONSIN,U-MADISON	4.0	3.8	3.2	5.0	6.0	3.8	2.8
162	DEPAUW UNIVERSITY/IN	4.0	2.9	3.9	5.3	6.3	3.5	1.7
167	NEW MEXICO STATE U	4.0	3.4	4.2	3.1	6.1		.9
4	MICHIGAN, UNIV OF	4.0	3.7	2.9	5.3	5.8	4.0	3.0
803	PARKS,ST LOUIS U/IL	4.0					1.4	
265	USAF ACADEMY/CO	4.0					3.5	.1
334	WASH&JEFFERSON C/PA	3.9	3.1	2.0	4.6	6.3	4.5	2.8
224	MIDDLEBURY COLL/VT	3.9	3.1	3.2	5.0	4.8	3.6	3.8

000136

APPENDIX B

BA TO PHD PRODUCTIVITY RATIOS BY BA INSTITUTION AND YEAR OF BACCALAUREATE

BA TO PHD OUTPUT RANK	INSTITUTION	TOTAL PRODUCTIVITY RATIO	1950 %	1955 %	1960 %	1965 %	1970 %	1975 %
225	ALLEGHENY COLLEGE/PA	3.9	3.7	2.9	5.9	4.9	3.2	2.9
118	MANHATTAN COLLECE/NY	3.9	1.1	3.4	3.3	7.6	5.3	2.5
183	MT HOLYOKE COLL/MA	3.9	2.4	2.3	2.7	5.4	6.1	3.2
287	ST JOHNS UNIV/MN	3.9	.6	1.9	7.8	6.4	5.1	1.5
29	PENNSYLVANIA, U OF	3.8	1.7	2.7	4.6	6.0	4.7	3.9
113	VANDERBILT UNIV/TN	3.8	1.8	2.3	5.6	6.7	4.9	2.6
238	COLORADO COLLEGE	3.8	1.7	2.2	2.5	5.2	4.7	4.8
170	ST OLAF COLLEGE/MN	3.8	3.5	3.9	5.4	4.5	3.7	2.3
61	CALIF,U-SANTA BARB	3.8			2.0	6.6	3.0	3.0
199	US NAVAL ACADEMY/MD	3.8	3.2				1.3	.4
141	EMORY UNIV/GA	3.8	2.8	2.0	4.7	6.4	4.6	2.8
3	ILL, U, URBANA-CHAMP	3.7	3.4	3.5	5.9	7.1	3.3	2.0
192	WHEATON COLLEGE/IL	3.7	2.1	2.6	5.3	5.7	3.5	3.0
71	WASHINGTON UNIV/MO	3.7	3.3	2.3	4.5	3.6	4.9	3.5
15	RUTGERS UNIV/NJ	3.7	5.0	3.3	4.9	5.1	3.9	2.1
345	SPRING HILL COLL/AL	3.7	2.2	2.8	5.4	6.2	2.5	.8
313	MILLSAPS COLLEGE/MS	3.7	1.1	1.4	1.8	10.8	5.3	2.6
13	PURDUE UNIVERSITY/IN	3.7	2.9	4.1	5.1	5.4	3.5	2.3
322	VIRGINIA MILITARY I	3.7	2.3	6.1	3.7	4.2	4.3	1.7
215	DENISON UNIV/OH	3.6	3.1	2.5	3.7	4.7	3.9	3.1
433	CENTRAL UNIV OF IOWA	3.6	3.5	5.1	2.9	9.9	2.6	2.1
52	CONNECTICUT, UNIV OF	3.6	4.2	3.0	3.3	3.7		2.0
289	FAIRFIELD UNIV/CT	3.6		3.7	1.8	3.9	4.7	3.4
554	HAMPDEN-SYDNEY C/VA	3.6	2.4		4.0	8.7	1.5	4.2
107	NEW MEXICO, UNIV OF	3.6	2.1	3.7	4.4	4.2		1.8
34	UTAH, UNIV OF	3.6	5.0	4.3	5.3	5.3	2.8	1.3
53	NC STATE U-RALEIGH	3.6	1.4	3.8	6.1	5.6	4.0	1.6
487	MASS COLL PHARMACY	3.5	3.8	7.7	4.0	5.7	1.9	
369	ROSE-HULMAN TECH/IN	3.5	6.3	4.1	6.3	3.1	3.6	1.7
259	AUGUSTANA COLL/IL	3.5	3.0	4.7	3.9	6.7	2.2	2.1
376	THOMAS MORE COLL/KY	3.5	1.5	2.3	5.2	6.0	2.8	2.8
466	SARAH LAWRENCE C/NY	3.5	1.3	7.3	4.6	1.5	3.4	3.6
177	CATHOLIC U AMER/DC	3.4	3.6	1.1	2.7	5.4	5.0	2.3
193	CALVIN COLLEGE/MI	3.4	4.8	4.4	5.0	3.7	2.1	2.8
799	MONT C MINRL SC&TECH	3.4	3.6	3.3	10.0	3.2	2.0	2.6
31	COLORADO,U-BOULDER	3.4	2.3	3.2	3.9	4.4		1.6
84	DELAWARE, UNIV OF	3.4	2.7	3.3	4.8	6.5	3.1	2.6
335	ST MARYS COLLEGE/MN	3.4	2.3	1.0	5.8	7.1	2.9	.8
48	SUNY AT BUFFALO	3.4	2.1	2.6	4.8	4.2	3.3	3.4
228	GETTYSBURG COLL/PA	3.4	1.7	1.9	5.1	4.8	3.1	2.9

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APPENDIX B

BA TO PHD PRODUCTIVITY RATIOS BY BA INSTITUTION AND YEAR OF BACCALAUREATE

BA TO PHD OUTPUT RANK	INSTITUTION	TOTAL PRODUCTIVITY RATIO	1950 %	1955 %	1960 %	1965 %	1970 %	1975 %
352	ST VINCENT COLL/PA	3.4	3.0	2.7	3.0	7.3	4.8	.5
72	GEORGIA INST TECH	3.4	1.9	3.4	3.9	6.5	2.8	2.7
367	LAKE FOREST COLL/IL	3.3	.5	.9	1.3	7.5	5.4	2.4
37	NORTHWESTERN UNIV/IL	3.3	2.5	1.9	3.6	4.8	4.1	3.9
257	CANISIUS COLLEGE/NY	3.3	1.7	4.3	7.8	4.4	3.0	2.0
382	AUSTIN COLLEGE/TX	3.3	1.0	4.8	1.0	6.3	3.8	2.5
196	CLARKSON UNIV/NY	3.2	1.1	4.1	3.9	6.6	2.0	3.2
85	UTAH STATE UNIV	3.2	5.2	3.9	3.4	4.4	1.8	1.8
508	HASTINGS COLLEGE/NE	3.2	1.4	1.1	6.7	4.6	2.7	3.2
562	WASHINGTON COLL/MD	3.2	1.1	2.4	3.9	5.2	4.0	2.7
101	DREXEL UNIVERSITY/PA	3.2	1.2	2.4	3.8	5.9	3.3	2.2
439	COE COLLEGE/IA	3.1	5.5	3.5	4.4	4.6	2.9	
397	BIRMNGHAM-STHRN C/AL	3.1	3.4	1.5	2.0	6.4	1.7	3 3
284	ALBION COLLEGE/MI	3.1	1.8	2.9	5.6	3.0	3.5	2.3
87	VIRGINIA, UNIV OF	3.1	2.6	1.6	5.4	3.5	4.3	2.6
12	PENN STATE UNIV	3.1	3.7	3.3	4.3	5.2	2.3	1.9
422	ST JOHN FISHER C/NY	3.1		5.8	4.0	4.9	2.8	1.7
346	LORAS COLLEGE/IA	3.1	1.0	3.5	4.1	4.1	3.9	1.4
41	TEXAS A&M UNIVERSITY	3.1	2.3	3.2	4.9	5.0	3.2	1.9
292	COLBY COLLEGE/ME	3.1	.4	1.4	4.2	5.8	3.4	3.1
416	RIPON COLLEGE/WI	3.1	4.5	8.2	5.7	3.1	1.6	.6
168	SMITH COLLEGE/MA	3.1	1.5	.5	3.6	5.9	3.0	4.0
580	WESTMONT COLLEGE/CA	3.1			6.9	4.0	6.4	
341	HIRAM COLLEGE/OH	3.1	3.1	1.1	2.4	5.4	5.1	.7
17	OHIO STATE UNIV	3.0	2.2	2.1	4.2	4.2		1.2
351	ALBRIGHT COLLEGE/PA	3.0	1.8	1.7	4.8	4.8	2.4	2.6
436	HENDRIX COLLEGE/AR	3.0	1.7	1.3	3.3	6.6	3.5	1.7
201	OHIO WESLEYAN UNIV	3.0	2.4	2.3	6.0	4.1	2.5	1.6
297	LOYOLA COLLEGE/MD	3.0	6.7	.9	2.7	5.9	2.8	1.0
388	SOUTH, UNIV OF/TN	3.0	4.4	4.2	2.4	6.6	1.2	
252	JOHN CARROLL UNIV/OH	2.9	1.3	2.6	2.9	5.5	2.2	2.4
42	CUNY-QUEENS COLL	2.9	6.0	4.1	4.3	5.0	2.8	1.1
169	MICHIGAN TECH UNIV	2.9	2.6	2.8	5.9	3.8	2.1	1.3
83	MIAMI UNIVERSITY/OH	2.9	2.1	2.6	2.6	3.7		1.2
55	COLORADO STATE UNIV	2.9	5.2	4.0	3.8	4.9	2.3	1.7
330	WILLAMETTE UNIV/OR	2.9	1.9	3.5	3.6	4.7	1.5	1.9
39	KANSAS, UNIV OF	2.9	2.9	2.6	4.2	4.2	2.7	1.6
120	TULANE U OF LA	2.9	1.7	1.0	4.5	5.4	3.4	2.2
110	GEO WASHINGTON U/DC	2.9	2.7	2.5	5.2	4.1	2.6	1.2
47	MASS, U OF-AMHERST	2.9	7.6	4.2	3.3	4.4	2.3	1.7

00038

APPENDIX B

BA TO PHD PRODUCTIVITY RATIOS BY BA INSTITUTION AND YEAR OF BACCALAUREATE

BA TO PHD OUTPUT RANK	INSTITUTION	TOTAL PRODUCTIVITY RATIO	1950	1955	1960	1965	1970	1975
			%	%	%	%	%	%
452	WILLIAM JEWELL C/MO	2.9	1.6	2.2	7.1	5.9	.9	1.5
122	RHODE ISLAND, U OF	2.9	3.2	3.8	4.3	5.2	2.2	1.7
132	NEW HAMPSHIRE, U OF	2.8	3.0	4.2	5.0	5.2	2.5	1.0
401	ROCKHURST COLLEGE/MO	2.8	2.0	3.8	5.3	5.4	3.1	.3
273	REDLANDS, U OF/CA	2.8	4.7	1.6	2.9	5.2	2.1	1.2
347	GUSTAV ADOLPHUS C/MN	2.8	1.6	3.4	2.8	5.0	1.8	2.7
412	MUSKINGUM COLLEGE/OH	2.8	.9	2.9	4.3	3.2	3.3	1.5
354	GOSHEN COLLEGE/IN	2.8	1.3	1.2	5.2	5.5	1.9	1.6
385	WESTERN MARYLAND COL	2.8	1.6	3.1	1.9	4.3	3.1	2.9
716	FLORIDA INST TECH	2.8						4.1
286	ST THOMAS, C OF/MN	2.8	2.4	2.4	5.7	4.3	2.8	1.0
528	BETHANY COLLEGE/WV	2.8	3.5	1.5	4.5	7.3	1.5	.5
467	IDAHO, COLLEGE OF	2.8	2.0	1.2	2.6	4.5	1.6	3.6
331	WASHINGTON&LEE U/VA	2.8	1.2	4.0	3.6	2.9	3.3	2.4
590	WHEELING COLLEGE/WV	2.7			4.1	4.3	1.6	2.4
66	VA POLY INST&STATE U	2.7	2.4	2.9	3.3	4.5	3.0	1.6
274	SCRANTON, U OF/PA	2.7	2.9	2.6	.7	5.2	3.9	.9
22	MISSOURI,U-COLUMBIA	2.7	1.9	2.7	3.5	4.5	2.8	1.7
198	HOLY CROSS, C OF/MA	2.7	2.1	2.6	2.5	5.4	2.5	1.7
495	MARIST COLLEGE/NY	2.7	27.3	9.1		2.0	3.4	.9
328	URSINUS COLLEGE/PA	2.7	2.1		2.7	4.5	2.5	3.3
733	TABOR COLLEGE/KS	2.7	5.4	9.1	2.7	2.8	2.4	
821	CATHED C IM CONCP/NY	2.7		8.9	2.3	2.9		1.6
203	WAKE FOREST UNIV/NC	2.7	1.2	.5	4.3	3.5	4.1	2.5
258	XAVIER UNIV/OH	2.6	1.4	3.8	3.1	4.3	2.6	1.0
9	TEXAS, U-AUSTIN	2.6	1.8	2.8	4.3	3.5	2.9	1.3
20	WASHINGTON, U OF	2.6	2.3	2.3	4.0	4.0	2.5	1.5
617	WESTMINSTER COLL/MO	2.6	2.0	7.3	5.9	1.1	2.7	1.4
666	ASSUMPTION COLL/MA	2.6		4.5	4.3	8.2	1.8	1.4
116	LOYOLA U CHICAGO/IL	2.6	1.8	2.2	3.4	4.2	2.9	1.5
408	MONMOUTH COLLEGE/IL	2.6	1.9	1.8	3.6	4.4	2.6	1.6
381	GOUCHER COLLEGE/MD	2.6	1.2	.8	3.8	1.0	4.6	3.3
356	LEWIS & CLARK C/OR	2.6	2.0	1.5	2.0	6.5	2.4	1.5
327	LE MOYNE COLLEGE/NY	2.6		2.5	4.8	4.0	3.0	1.8
25	NEW YORK UNIVERSITY	2.6	2.4	1.7	2.7	3.6	3.5	2.2
76	TEMPLE UNIVERSITY/PA	2.5	2.1	2.0	2.7	2.9		1.0
559	MARYVILLE COLLEGE/TN	2.5	1.2	3.1	1.9	4.9	1.5	2.8
661	JAMESTOWN COLLEGE/ND	2.5	6.5	1.7	2.2	1.3	2.6	1.8
248	SANTA CLARA UNIV/CA	2.5	.9	2.0	4.3	3.9	2.5	1.8
599	DALLAS, UNIV OF/TX	2.5			2.6	4.1	2.0	2.0

00139

APPENDIX B

BA TO PHD PRODUCTIVITY RATIOS BY BA INSTITUTION AND YEAR OF BACCALAUREATE

BA TO PHD OUTPUT RANK	INSTITUTION	TOTAL PRODUCTIVITY RATIO	1950	1955	1960	1965	1970	1975
			%	%	%	%	%	%
221	PROVIDENCE COLL/RI	2.5	2.5	1.2	3.2	3.8	2.6	1.4
143	IDAHO, UNIV OF	2.5	2.9	3.6	4.0	4.0	.8	1.2
424	NORTH CENTRAL C/IL	2.5	5.1	.8	3.4	4.9	.5	.9
58	NEBRASKA, U-LINCOLN	2.5	2.7	2.2	3.7	3.9	2.0	1.4
133	SUNY AT ALBANY	2.5	2.1	1.0	2.2	2.9	2.3	2.9
454	HEIDELBERG COLL/OH	2.5	3.2	2.7	4.3	1.5	2.3	2.2
142	VERMONT, U OF	2.5	3.1	2.1	2.3	3.3	2.6	2.0
465	ST MICHAELS COLL/VT	2.5	1.8	2.9	1.6	6.8	1.6	1.1
314	TRINITY UNIV/TX	2.5	1.7	2.7	2.3	3.8	3.9	1.1
447	HANOVER COLLEGE/IN	2.5	2.1	2.2	1.3	3.6	4.2	1.1
46	OKLAHOMA STATE UNIV	2.5	2.2	3.2	3.6	3.6	2.1	1.3
11	MINNESOTA,U-MINNEAPL	2.5	2.0	2.8	4.2	3.9	1.9	1.7
481	ELMHURST COLLEGE/IL	2.5	8.8	.9	2.5	2.4	2.7	1.2
36	BRIGHAM YOUNG U/UT	2.5	4.2	3.4	4.8	2.7	1.8	1.5
315	MARIETTA COLLEGE/OH	2.4	3.5	1.3	3.3	3.0	1.9	1.8
135	MONTANA STATE UNIV	2.4	5.1	3.2	2.7	3.4	1.8	.9
804	ST LOUIS C PHARM/MO	2.4		5.4	4.5	5.5		1.5
588	PACIFIC UNION C/CA	2.4	2.0	1.1	5.7	3.6	.7	2.0
44	LA ST UNIV & A&M C	2.4	2.2	1.9	3.1	4.5	2.2	1.6
479	ST ANSELM COLL/NH	2.4	4.3	1.3	3.4	1.8	3.5	.7
100	ARKANSAS,U-FAYETTVLE	2.4	2.5	2.0	2.9	3.5	2.0	1.6
291	ST PETERS COLL/NJ	2.4	3.6	1.8	4.0	4.1	2.0	1.0
770	NOTRE DAME COLL/OH	2.4	2.0			7.8	2.1	1.1
600	MILLS COLLEGE/CA	2.4	1.9	.9	2.2	3.7	4.0	1.4
90	CUNY-HUNTER COLLEGE	2.4	2.4	1.9	2.2	3.6	3.2	1.1
65	OREGON STATE UNIV	2.4	2.8	3.0	4.1	3.5	1.7	1.1
30	FLORIDA, UNIV OF	2.4	1.8	2.3	5.6	4.5	2.0	1.3
563	SOUTHWESTERN U/TX	2.4	3.5		1.9	2.9	1.5	3.2
319	HOBART&WM SMITH C/NY	2.4	1.3		2.4	4.3	1.3	2.0
68	KANSAS STATE UNIV	2.4	2.5	3.4	3.3	3.5	2.3	1.0
79	WASHINGTON STATE U	2.4	2.9	2.5	4.6	4.0	1.7	1.0
516	RANDOLPH-MACON C/VA	2.4	1.0	2.5	1.1	5.4	3.0	1.4
469	CLRMONT MCKENNA C/CA	2.4		3.4	1.3	2.7	4.1	2.2
211	VALPARAISO UNIV/IN	2.3	1.5	1.7	4.0	3.7	1.7	1.5
283	WITTENBERG UNIV/OH	2.3	.9	2.8	3.0	2.3	2.7	2.4
549	BETHEL COLL/KS	2.3	1.1	1.3	3.4	3.7	4.2	
253	ST LAWRENCE UNIV/NY	2.3	2.0	2.4	2.0	2.1	4.2	1.7
308	FURMAN UNIV/SC	2.3	1.3	1.1	1.9	4.8	2.4	2.3
115	OHIO UNIVERSITY	2.3	2.6	2.4	2.6	2.3		.7
54	PITTSBURGH, UNIV OF	2.3	1.8	1.7	2.8	6.0	2.8	1.2

APPENDIX B

BA TO PHD PRODUCTIVITY RATIOS BY BA INSTITUTION AND YEAR OF BACCALAUREATE

BA TO PHD OUTPUT RANK	INSTITUTION	TOTAL PRODUCTIVITY RATIO	1950 %	1955 %	1960 %	1965 %	1970 %	1975 %
349	WILKES COLLEGE/PA	2.3	3.5	2.8	.6	2.6	1.8	2.7
59	NC, U OF-CHAPEL HILL	2.3	2.3	1.1	3.0	3.8	2.3	1.7
520	PHILLIPS UNIV/OK	2.3	3.0	.6	4.3	3.2	1.7	1.5
478	WOFFORD COLLEGE/SC	2.3	2.5	1.6	2.6	3.1	3.4	.8
394	NEBRASKA WESLEYAN U	2.3	2.5	1.8	1.3	2.6	3.2	1.9
63	OKLAHOMA, U OF	2.3	1.9	2.4	4.3	3.0	2.0	1.2
434	MOREHOUSE COLL/GA	2.2	1.5	4.7	1.9	5.7	1.2	.9
62	IOWA, UNIVERSITY OF	2.2	2.9	1.6	3.1	3.1	1.8	1.5
338	LUTHER COLLEGE/IA	2.2	2.4	.9	2.6	4.3	1.4	2.0
486	ALASKA, UNIV OF	2.2	2.9	10.3	4.4	2.6	2.0	1.1
121	ST LOUIS UNIV/MO	2.2	2.0	1.0	3.9	3.0	2.6	1.3
384	CONNECTICUT COLLEGE	2.2			1.3	2.7	2.2	4.0
70	ARIZONA, UNIV OF	2.2	2.8	2.3	3.4	2.4	1.9	1.6
217	ST. JOSEPHS UNIV/PA	2.2	1.1	3.9	2.2	4.2	1.8	1.6
295	CONCORDIA-MORHEAD/MN	2.2	2.1	2.6	4.3	2.6	1.5	1.0
488	HOUGHTON COLL/NY	2.2	3.7	3.1	2.8	3.0	.4	1.8
725	WELLS COLLEGE/NY	2.2		1.7		1.0	6.3	.9
145	CLEMSON UNIV/SC	2.2	1.4	1.9	2.7	5.7	1.7	1.3
16	MICHIGAN STATE UNIV	2.2	2.4	1.5	2.7	2.6	2.3	1.5
543	ROANOKE COLLEGE/VA	2.2		1.4	2.0	4.3	1.9	2.2
450	ALMA COLLEGE/MI	2.2	9	3.8	1.8	4.9	1.7	1.1
533	ST NORBERT COLL/WI	2.2	2.1	1.5	4.0	4.9	1.4	.4
357	HAMLINE UNIV/MN	2.1	1.4	.5	3.9	4.9	2.4	1.0
94	FORDHAM UNIV/NY	2.1	1.5	1.8	1.9	3.8	3.5	1.1
613	CARROLL COLLEGE/MT	2.1	4.8	2.4	2.7	3.3	1.7	.6
102	BOSTON COLLEGE/MA	2.1	1.6	1.2	2.6	3.1	2.9	1.3
306	GONZAGA UNIV/WA	2.1		1.9	3.7	3.1	2.2	.9
311	LOYOLA MARYMONT U/CA	2.1	.6	1.4	3.9	5.1	2.2	1.2
783	EASTERN COLLEGE/PA	2.1		4.2	1.9	3.4	.9	1.8
523	LINFIELD COLLEGE/OR	2.1	4.1	2.9	1.5	4.4	1.0	.8
624	CHATHAM COLLEGE/PA	2.1	1.3	1 3	4.0	1.7	4.6	
187	MONTANA, UNIV OF	2.1	2.3	1.3	3.3	4.0	2.1	.7
569	BRIDGEWATER COLL/VA	2.1	1.0	4.3	4.4	3.2	1.7	.5
576	CENTRAL METH COLL/MO	2.1	1.4	2.4	5.7	2.2	1.6	
526	MACMURRAY COLLEGE/IL	2.1			.8	4.5	4.7	.6
489	THIEL COLLEGE/PA	2.1	1.0		3.5	2.0	1.8	2.9
73	CINCINNATI, U OF/OH	2.1	1.6	2.5	3.1	3.8	1.8	1.3
234	HUMBOLDT STATE U/CA	2.1	.9	1.5	2.7	3.1	2.7	1.4
589	MT ST MARYS COLL/MD	2.1	2.3	1.1	3.9	2.0	3.9	
374	BALDWIN-WALLACE C/OH	2.1	2.2	1.1	2.5	3.3	2.6	1.1

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APPENDIX B

BA TO PHD PRODUCTIVITY RATIOS BY BA INSTITUTION AND YEAR OF BACCALAUREATE

BA TO PHD OUTPUT RANK	INSTITUTION	TOTAL PRODUCTIVITY RATIO	1950 %	1955 %	1960 %	1965 %	1970 %	1975 %
502	ST MARYS COLL CALIF	2.1	1.4	1.6	2.7	3.0	3.5	.5
658	LINCOLN UNIV/PA	2.1	4.5		1.8	1.2	2.0	1.9
175	NORTH DAKOTA ST UNIV	2.1	2.0	3.3	3.2	3.2	1.7	.9
197	SOUTH DAKOTA STATE U	2.1	2.3	2.5	2.5	4.6	.8	1.3
152	WYOMING, UNIV OF	2.1	3.1	1.8	3.2	3.6	1.3	1.1
235	ALFRED UNIVERSITY/NY	2.1	6.5	2.3	7.4	8.5	3.3	.5
738	US COAST GUARD ACAD	2.1	3.2				.7	
157	DAYTON, U OF/OH	2.0	1.5	3.5	3.2	2.8	2.0	.7
534	FISK UNIVERSITY/TN	2.0	1.1	2.9	1.7	2.0	1.8	2.6
595	POINT LOMA NAZA C/CA	2.0	1.8	4.8	.7	1.4	2.3	1.3
390	MANCHESTER COLL/IN	2.0	2.7	2.1	2.2	2.5	1.0	1.7
471	HARTWICK COLLEGE/NY	2.0	3.0	3.9	3.3	1.9	1.1	1.6
398	TUSKEGEE UNIV/AL	2.0	.9	.6	3.1	3.7	2.2	1.5
627	SIMPSON COLLEGE/IA	2.0	2.2	1.2	2.1	5.1	.5	1.1
93	WEST VIRGINIA UNIV	2.0	2.1	2.9	4.1	3.4	1.4	.8
527	PARK COLLEGE/MO	2.0	8.8	7.4	6.8	6.3	1.0	
805	TARKIO COLLEGE/MO	2.0	4.5		2.1	2.1	.7	3.5
26	MARYLAND, UNIV OF	2.0	2.5	2.3	2.6	3.2	1.9	2.3
494	AUGSBURG COLLEGE/MN	2.0	1.3	1.1	3.9	2.7	2.3	.7
402	MERRIMACK COLLEGE/MA	2.0		1.2	4.1	2.1	2.3	1.7
307	OAKLAND UNIV/MI	2.0					1.9	1.0
69	SYRACUSE UNIV/NY	2.0	2.1	1.5	3.2	2.1	2.6	1.2
155	GEORGETOWN UNIV/DC	2.0	.5	.5	3.9	4.3	3.2	1.3
263	LOWELL, UNIV OF/MA	1.9	1.0	1.2	2.6	4.0	3.2	.7
513	WALLA WALLA COLL/WA	1.9	2.6	.6	1.3	4.3	1.9	1.0
625	ROCKFORD COLLEGE/IL	1.9			6.2	4.7	1.3	.6
114	MISSISSIPPI STATE U	1.9	1.9	2.2	2.4	3.3	1.6	1.2
320	WISCONSIN,U-RIVR FLS	1.9	2.3	2.7	3.6	2.0	1.6	1.1
267	NEW JERSEY INST TECH	1.9	3.0	1.2	3.0	3.8	1.3	.1
126	MAINE, U-ORONO	1.9	2.1	2.6	1.5	3.0	1.0	1.9
685	N PARK C&THEOL S/IL	1.9			4.5	3.6	1.3	
425	CARROLL COLLEGE/WI	1.9	1.1	1.8	1.9	2.6	2.5	1.5
123	MARQUETTE UNIV/WI	1.9	.7	1.3	2.4	3.3	2.5	1.1
366	KINGS COLLEGE/PA	1.8	3.0	4.3	1.8	2.6	1.2	.9
683	WILSON COLLEGE/PA	1.8	2.1	1.8	1.9	3 [illegible]	1.3	
269	SAN FRANCSCO.U OF/CA	1.8	.4	.7	2.4	1.8	3.9	.7
60	WAYNE STATE UNIV/MI	1.8	1.5	2.0	3.0	3.7	1.0	.8
490	HARDING UNIVERSTY/AR	1.8	1.8	2.0	5.7	2.2	1.3	.7
581	WHEATON COLLEGE/MA	1.8	1.2	1.0	.7	1.7	2.1	2.7
729	ALBERTUS MAGNUS C/CT	1.8		4.0	1.7	1.3	1.4	2.3

APPENDIX B

BA TO PHD PRODUCTIVITY RATIOS BY BA INSTITUTION AND YEAR OF BACCALAUREATE

BA TO PHD OUTPUT RANK	INSTITUTION	TOTAL PRODUCTIVITY RATIO	1950 %	1955 %	1960 %	1965 %	1970 %	1975 %
693	TOUGALOO COLLEGE/MS	1.8	2.4	5.9	1.6	3.1	1.4	
629	MCMURRAY COLLEGE/TX	1.8		1.1	2.3	4.8	.8	1.1
568	MARYLAND,U-BALT CNTY	1.8					2.9	1.4
593	ESTRN NAZARENE C/MA	1.8		1.4	1.3	2.9	2.7	1.3
491	ANDREWS UNIV/MI	1.8	2.6	2.4	2.9	2.5	1.6	.4
475	WEST VA WESLEYAN C	1.8	2.3	1.9	5.8	2.1	.8	.3
88	TEXAS TECH UNIV	1.8	1.8	1.7	3.3	3.3	1.6	.8
182	WISCONSIN,U-MILWAUKE	1.8		.3		3.8	1.9	1.3
105	OREGON, UNIV OF	1.8	1.0	1.9	3.3	2.8	1.8	1.0
153	VILLANOVA UNIV/PA	1.8	1.9	.6	2.2	2.1	2.4	1.6
552	TRINITY COLLEGE/DC	1.8	.9	1.0	1.1	4.9	1.4	
277	RICHMOND, U OF/VA	1.8	1.3	1.9	2.9	2.8	.9	1.2
98	KENTUCKY, UNIV OF	1.8	1.8	2.9	2.7	2.9	1.2	1.1
769	ST JOSEPHS COLL/NY	1.8	1.2	1.4	1.1	1.8	3.7	.7
714	MCPHERSON COLLEGE/KS	1.8	5.0	1.4	2.6	1.7	1.3	
829	ST MARTINS COLL/WA	1.8	5.8	3.2		3.6	1.9	.4
736	UNION COLLEGE/NE	1.7	2.8		2.5	2.8	1.3	
507	ILLINOIS WESLEYAN U	1.7	1.6	.8	1.6	.8	3.2	1.3
626	BETHEL COLLEGE/MN	1.7			2.5	2.5	1.7	1.9
647	BERRY COLLEGE/GA	1.7	3.5	3.0	3.4	3.0	.3	.5
844	ALDERSN BROADUS C/WV	1.7	2.3			3.9	2.0	.9
171	HOFSTRA UNIV/NY	1.7	2.1	1.1	2.3	2.2	1.3	1.6
160	CAL ST U, FRESNO	1.7	1.6	1.5	1.7	2.1		.6
316	CREIGHTON UNIV/NE	1.7	.8	1.8	4.0	2.8	1.7	.8
606	AQUINAS COLLEGE/MI	1.7	1.8	3.0	3.2	3.2	.4	1.0
779	EVERGREEN ST COLL/WA	1.7						1.7
715	PFEIFFER COLLEGE/NC	1.7			1.6	2.5	2.0	.9
756	ROSEMONT COLLEGE/PA	1.7	1.5		3.7	2.4	1.5	.7
378	PACIFIC LTHRN U/WA	1.7	1.3	1.6	1.8	3.0	1.6	1.2
236	BRADLEY UNIV/IL	1.7	1.0	3.1	1.7	2.2	1.9	.9
232	LA SALLE UNIV/PA	1.7	.5	1.8	1.2	3.9	1.0	1.3
194	HOWARD UNIVERSITY/DC	1.7	1.2	.4	1.7	3.7	2.0	1.3
380	ST BONAVENTURE U/NY	1.7	1.3	1.8	3.8	2.3	1.4	.9
459	WESTMINSTER COLL/PA	1.7	.9	.7	1.8	1.9	2.4	1.9
427	GANNON UNIV/PA	1.7	1.5	2.0	3.1	3.5	.9	.7
413	SIENA COLLEGE/NY	1.7	.7	1.7	1.7	4.1	.9	1.6
675	BENNINGTON COLL/VT	1.6		1.9		2.5	1.4	2.8
539	OKLAHOMA BAPT UNIV	1.6	1.1	1.1	2.6	2.8	2.1	.7
77	GEORGIA, UNIV OF	1.6	1.6	1.0	2.2	2.7	1.1	1.4
81	FLORIDA STATE UNIV	1.6	1.1	1.1	1.9	2.9	1.4	1.1

00v193

APPENDIX B

BA TO PHD PRODUCTIVITY RATIOS BY BA INSTITUTION AND YEAR OF BACCALAUREATE

BA TO PHD OUTPUT RANK	INSTITUTION	TOTAL PRODUCTIVITY RATIO	1950 %	1955 %	1960 %	1965 %	1970 %	1975 %
773	GRACELAND COLL/IA	1.6					3.1	1.2
740	CONCORDIA THEO SM/IN	1.6			3.4	1.6	1.1	.6
109	MIAMI, UNIV OF/FL	1.6	1.2	1.7	1.8	2.6	1.4	1.4
505	ROLLINS COLLEGE/FL	1.6	3.9	2.1	2.3	1.5	1.5	1.0
597	AGNES SCOTT COLL/GA	1.6	1.0	2.2	3.3	1.3	1.4	.8
343	LOYOLA UNIVERSITY/LA	1.6	.8	1.5	3.5	3.7	1.0	.8
40	INDIANA U BLOOMNGTON	1.6	1.4	1.1	2.1	3.0	1.6	1.1
278	TULSA, UNIV OF/OK	1.6	1.6	2.9	1.3	1.6	1.6	1.1
560	WHITWORTH COLL/WA	1.6	1.8	3.0	1.5	.8	1.2	1.8
696	GREENVILLE COLL/IL	1.6		2.6	2.8	3.9		.6
619	TEXAS LUTHERAN COLL	1.6	6.5			.9	1.9	1.6
166	BAYLOR UNIV/TX	1.6	1.1	.8	2.4	2.6	1.5	1.3
415	GROVE CITY COLL/PA	1.6	1.4	1.5	1.5	2.7	.7	1.6
699	TRANSYLVANIA U/KY	1.6	1.3	1.4	2.3	2.5	1.3	1.2
80	SAN DIEGO STATE U/CA	1.6	2.9	1.5	2.7	3.5	1.3	.7
522	DRURY COLLEGE/MO	1.6	2.2	1.6	.5	1.6	2.5	1.2
405	WAGNER COLLEGE/NY	1.6	3.6	.9	3.0	2.1	.5	.4
151	STHRN METHODIST U/TX	1.6	1.2	1.5	3.0	2.3	1.2	1.4
237	ROOSEVELT UNIV/IL	1.6	2.6	1.6	2.1	2.1	1.1	.1
176	DETROIT, U OF/MI	1.6	.6	.7	2.1	3.6	1.2	1.5
368	ST MARYS UNIV/TX	1.6	1.4	3.1	1.6	3.6	.5	.4
671	ST. EDWARD'S U/TX	1.6	1.9	4.0		5.3	1.1	
181	BOWLING GREEN S U/OH	1.6	.7	1.1	1.3	2.1		.9
64	TENN, U-KNOXVILLE	1.6	1.9	1.6	3.2	3.0	1.1	.8
577	U S INTERNATL U/CA	1.6			1.1	2.9	2.0	.9
409	SE MASS U-N DARTMOTH	1.6		4.4	1.9	3.8	1.1	1.2
631	OTTAWA UNIVERSITY/KS	1.6			3.1	3.5	1.6	.8
623	REGIS COLLEGE/CO	1.6		3.4	3.6	3.0	.5	.5
99	SOUTHERN CALIF, U OF	1.6	1.2	.9	2.4	2.5	1.9	1.5
213	NORTH DAKOTA, U OF	1.6	1.1	3.0	2.8	2.8	1.0	.6
407	AUGUSTANA COLL/SD	1.6	2.2	.9	1.4	2.3	1.4	1.5
419	CAPITAL UNIV/OH	1.5	1.5	.8	2.0	2.7	.9	1.2
518	WARTBURG COLL/IA	1.5	5.3	1.0	2.2	1.8	1.0	.7
531	GENEVA COLLEGE/PA	1.5	1.9		5.2	2.5	.3	.3
223	AKRON, U OF/OH	1.5	2.4	1.9	1.6	1.5	1.9	1.0
480	SKIDMORE COLLEGE/NY	1.5	1.0		1.7	1.8	2.8	.9
517	MT UNION COLLEGE/OH	1.5	1.0		3.3	1.8	1.1	1.5
707	WILMINGTON COLL/OH	1.5	1.7	2.1	1.4	3.7		.6
246	MISSOURI,U-KANS CITY	1.5	1.5	.5	2.9	2.1	1.8	1.1
704	SETON HILL COLL/PA	1.5	2.0	1.2	.9	2.2	1.4	1.4

00v194

APPENDIX B

BA TO PHD PRODUCTIVITY RATIOS BY BA INSTITUTION AND YEAR OF BACCALAUREATE

BA TO PHD OUTPUT RANK	INSTITUTION	TOTAL PRODUCTIVITY RATIO	1950	1955	1960	1965	1970	1975
			%	%	%	%	%	%
250	DUQUESNE UNIV/PA	1.5	1.5	.9	2.4	2.7	1.4	.4
771	FRANKLIN C INDIANA	1.5	2.6		1.1	3.3	1.6	
541	ST JOSEPHS COLL/IN	1.5	3.4	1.3	2.3	1.3	.7	1.3
795	DANA COLLEGE/NE	1.5	4.2		1.4	1.6		3.8
708	ILLINOIS COLLEGE	1.5	1.0	1.9	2.1	2.2	.7	1.6
74	BOSTON UNIVERSITY/MA	1.5	.9	1.2	1.9	2.0	1.7	1.3
403	SIMMONS COLLEGE/MA	1.5	.7		3.7	1.6	2.7	.9
247	NEVADA, UNIV OF	1.5	3.4	2.5	1.8	1.6	1.2	1.1
660	PRINCIPIA COLLEGE/IL	1.5	1.4	2.6	2.2	1.5	.6	1.5
723	HUNTINGDON COLL/AL	1.5	2.1		1.8	3.8	.6	
485	DAVID LIPSCOMB C/TN	1.5	4.0	2.1	2.9	1.6	.9	.7
391	STETSON UNIV/FL	1.5	.3	.9	2.0	3.9	1.1	1.3
230	ADELPHI UNIV/NY	1.5	2.1	.5	1.5	1.8	1.7	1.3
243	LOUISIANA TECH UNIV	1.5	1.5	1.8	1.6	3.3	1.1	.7
456	BENEDICTINE COL /KS	1.5	1.4	.9	1.8	2.0	1.6	.9
579	STONEHILL COLLEGE/MA	1.5		2.4	1.9	1.8	1.4	1.2
721	CHRISTN BROTHRS C/TN	1.5		5.9	1.3	2.7	1.4	
591	STHRN NAZARENE U/OK	1.5	2.3	1.0	2.4	2.5	1.5	
239	TEXAS CHRISTIAN UNIV	1.5	1.2	1.6	2.7	1.9	.8	1.2
299	TENNESSEE TECH U	1.5	1.7	1.1	3.0	2.8	1.1	.5
103	ALABAMA, UNIVER OF	1.5	1.1	1.5	2.4	2.3	1.4	1.0
815	FRIENDS UNIV/KS	1.4	2.0	1.4	1.2	2.3	1.5	.7
608	INDIANA INST OF TECH	1.4	.6	.5		2.4	1.1	4.4
124	HOUSTON, U OF/TX	1.4	.7	.6	1.5	2.5	2.0	.9
339	FORT HAYS STATE U/KS	1.4	3.5	.5	1.9	2.6	.6	.7
758	KANSAS WESLEYAN	1.4			2.3	1.8	2.0	1.0
655	CAL ST U,S BERNRDINO	1.4					1.6	1.3
96	AUBURN UNIVERSITY/AL	1.4	1.1	1.4	2.4	2.4	.9	1.0
254	LAMAR UNIVERSITY/TX	1.4		1.6	1.7	3.3	.8	.5
119	NORTHEASTERN U/MA	1.4	1.2	1.3	1.9	2.6	1.2	.9
210	WICHITA ST UNIV/KS	1.4	1.7	3.5	1.9	2.4	.9	.6
484	MIDWESTERN ST U/TX	1.4	.5	3.5	2.7	3.0	.2	1.0
472	ST FRANCIS COLL/NY	1.4	2.9	2.7	.6	2.4	1.7	
698	IOWA WESLEYAN COLL	1.4	1.6		4.5	1.9	.4	.6
587	WICHITA BAPT U/AR	1.4		1.8	.5	3.3	2.0	.6
775	HOOD COLLEGE/MD	1.4		1.4	2.9	2.3	1.8	
536	CENTENARY COLL/LA	1.4	.9	1.2	.6	2.5	1.0	2.4
722	UNION UNIVERSITY/TN	1.4	2.1		1.0	3.0	1.9	
757	ADRIAN COLLEGE/MI	1.4		4.4		1.7	1.5	1.4
784	BLUFFTON COLLEGE/OH	1.4	4.3	3.3	3.1	1.6		.7

66095

APPENDIX B

BA TO PHD PRODUCTIVITY RATIOS BY BA INSTITUTION AND YEAR OF BACCALAUREATE

BA TO PHD OUTPUT RANK	INSTITUTION	TOTAL PRODUCTIVITY RATIO	1950 %	1955 %	1960 %	1965 %	1970 %	1975 %
219	LOUISVILLE, U OF/KY	1.4	1.1	2.0	1.1	2.3	1.5	.9
423	WEBER STATE COLL/UT	1.4				3.0	1.3	.8
823	CULVER-STOCKTON C/MO	1.4	1.8		3.1	4.9		.4
742	ST MARYS SEM & U/MD	1.4	.7	.8	2.2	1.2	3.3	
117	ARIZONA STATE UNIV	1.4	.9	1.8	1.4	2.7	1.4	.7
640	ESTRN MENNONITE C/VA	1.4	1.8		1.2	2.6	1.6	1.0
510	LYCOMING COLLEGE/PA	1.4	.9	1.2	1.9	2.6	1.3	.6
530	EMMANUEL COLLEGE/MA	1.4	.7		1.5	1.9	2.7	.5
226	AMERICAN UNIV/DC	1.4	2.9	1.1	1.3	1.6	1.8	.7
582	MANHATTANVILLE C/NY	1.4	1.1		2.0	1.8	2.1	.7
506	ST FRANCIS COLL/PA	1.4	.6	1.1	.6	2.2	2.3	.3
498	OTTERBEIN COLLEGE/OH	1.4	2.2	1.8	.5	2.9	.7	.7
464	SONOMA STATE UNIV/CA	1.4				3.3	1.8	1.0
373	WHITTIER COLLEGE/CA	1.4	1.6	1.5	1.7	1.6	1.1	1.0
511	WRIGHT STATE UNIV/OH	1.4						.8
231	TOLEDO, UNIV OF/OH	1.4	.9	1.3	2.4	3.0	1.3	.6
462	EVANSVILLE, U OF/IN	1.4	1.7	1.6	3.4	1.5	1.3	.4
774	STERLING COLLEGE/KS	1.3	4.0	2.4	1.1	1.5	.8	
361	PACIFIC, U OF/CA	1.3	.8	1.3	3.0	2.7	1.5	.2
643	MT ST VINCENT,COL/NY	1.3	.7	.7	.5	2.4	1.1	2.0
426	UPSALA COLLEGE/NJ	1.3	.7	2.1	.7	2.2	1.1	1.5
634	TAYLOR UNIVERSITY/IN	1.3	1.3		3.4	2.0	1.2	.7
743	AUGUSTA COLLEGE/GA	1.3					1.8	.9
649	BAKER UNIV/KS	1.3	.8	2.7		2.1	1.1	1.3
359	OLD DOMINION UNIV/VA	1.3				2.1	1.6	.7
500	EASTERN NEW MEXICO U	1.3	1.5	.6	1.3	2.5		.2
567	RANDOLPH-MACN WOM/VA	1.3				2.7	1.6	2.6
318	IDAHO STATE UNIV	1.3	1.8	2.2	2.2	2.3	.7	.3
134	HAWAII, UNIV OF	1.3	2.5	2.0	1.1	1.7	1.4	.8
718	FT LEWIS COLLEGE,CO	1.3				3.5	1.6	.3
700	NW NAZARENE COLL/ID	1.3		2.6	1.2	2.3		1.8
163	LIU-BROOKLYN CMPS/NY	1.3	2.1	2.2	1.7	1.9	1.0	.8
255	DEPAUL UNIVERSITY/IL	1.3	.9	1.1	2.7	1.9	.9	.9
188	DENVER, UNIV OF/CO	1.3	1.5	1.1	1.7	2.2	.9	.7
797	OGLETHORPE UNIV/GA	1.3		1.0	1.5	4.0	.9	.6
317	ABILENE CHRIST U/TX	1.3	2.2	.8	1.4	2.2	1.1	.6
186	SOUTH FLORIDA, U OF	1.3				3.3	1.1	1.0
418	CITADEL, THE/SC	1.3	1.0	1.4	2.7	1.4	1.3	.2
174	CAL ST U, NORTHRIDGE	1.3			1.6	2.2	1.2	.8
605	LEWIS UNIVERSITY/IL	1.3			2.7	2.4	2.2	.4

000196

APPENDIX B

BA TO PHD PRODUCTIVITY RATIOS BY BA INSTITUTION AND YEAR OF BACCALAUREATE

BA TO PHD OUTPUT RANK	INSTITUTION	TOTAL PRODUCTIVITY RATIO	1950 %	1955 %	1960 %	1965 %	1970 %	1975 %
344	IONA COLLEGE/NY	1.3	.3	.3	2.2	2.5	1.3	.9
555	GUILFORD COLL/NC	1.3	5.1	1.2	2.4	.9	1.1	
342	BUTLER UNIV/IN	1.3	.8	.7	1.3	2.4	.6	2.3
833	PHIL C TEXTIL&SCI/PA	1.3		1.9	1.4	2.4	1.6	.9
285	WISCONSIN,U-STEVN PT	1.2	.5	1.3	1.7	1.8	.9	1.2
371	SEATTLE UNIV/WA	1.2	.9	.7	1.1	2.3	1.0	.7
455	GMI ENGR&MNGMNT I/MI	1.2		.3	2.2	1.5	1.4	.9
468	SEATTLE PACIFIC U/WA	1.2	2.3	.5	.8	1.8	1.2	.7
312	WISCONSIN,U-E CLAIRE	1.2		.8	1.7	2.7	1.0	.8
379	BRIDGEPORT, U OF/CT	1.2	.7	1.5	.6	1.3	1.5	1.2
667	SYRACUSE U-UTICA/NY	1.2					.6	.4
712	GORDON COLLEGE/MA	1.2		1.1	.9	5.0		.6
596	LYNCHBURG COLLEGE/VA	1.2	.7	2.2	2.4	.5	1.3	.8
242	PORTLAND STATE U/OR	1.2			1.6	2.5	1.1	.7
458	NIAGARA UNIV/NY	1.2	.8		2.1	3.4	.2	.9
819	OUR LADY LAKE UN/TX	1.2	2.3	2.0	.9	1.4	.5	1.1
173	N TEXAS STATE UNIV	1.2	.9	2.0	1.9	1.7	1.0	.4
86	SOUTHERN ILL UNIV	1.2	1.8	1.6	2.6	2.1	.9	.6
824	WEBSTER UNIV/MO	1.2			.8	1.5	2.1	.4
676	REGIS COLLEGE/MA	1.2			3.7	1.4	1.5	
304	SOUTH DAKOTA, U OF	1.2	1.9	1.9	1.4	1.8	1.1	.3
553	MORAVIAN COLLEGE/PA	1.2	6.7	1.0		3.7	.6	.3
399	ROCHESTER I TECH/NY	1.2			1.0	2.8	1.9	.4
561	ELIZABETHTOWN C/PA	1.2	2.2	3.0	.7	1.7	1.1	.6
448	MISSISSIPPI COLLEGE	1.2		2.2	1.7	2.1	.7	.5
730	ELMIRA COLLEGE/NY	1.2			1.0	1.4	2.0	.8
746	N MEXICO HIGHLANDS U	1.2	.6	1.9	2.7	3.4	.9	
835	BETHANY COLL/KS	1.2	1.6		1.3	1.5	1.7	.8
564	SPRINGFIELD COLL/MA	1.2	.6	.6	.8	4.1	.5	.6
172	ST JOHNS U-QUEENS/NY	1.2	1.1	1.1	1.5	1.6	1.4	.7
542	MILLIKIN UNIV/IL	1.2	1.5		1.9	2.6	.7	.9
290	CLEVELAND ST UNIV/OH	1.2	.7	2.6	4.3	2.2	1.0	.8
602	WAYNESBURG COLL/PA	1.2	1.1		1.2	1.1	1.0	2.0
272	EASTERN ILL UNIV	1.2	2.7	.8	2.1	2.0	.9	.8
499	MERCER UNIVERSITY/GA	1.2	.7	.7	1.1	1.7	2.1	1.1
189	CAL POL S U-SL OBISP	1.1	.7	2.2	1.4	1.9	.8	.8
279	CAL ST POLY-POMONA	1.1				2.4	.9	.7
584	CARTHAGE COLL/WI	1.1				1.7	1.1	.5
512	TENN, U-CHATTANOOGA	1.1	2.4	2.4	.9	2.3	.3	.4
635	QUINCY COLLEGE/IL	1.1	1.6	1.3		1.3	1.9	.3

00v137

APPENDIX B

BA TO PHD PRODUCTIVITY RATIOS BY BA INSTITUTION AND YEAR OF BACCALAUREATE

BA TO PHD OUTPUT RANK	INSTITUTION	TOTAL PRODUCTIVITY RATIO	1950 %	1955 %	1960 %	1965 %	1970 %	1975 %
832	ATLANTIC UNION C/MA	1.1		2.6	3.0	1.1	1.0	
365	PUGET SOUND, U OF/WA	1.1	.8	1.7	2.4	1.5	.9	.8
364	NORTHERN ARIZONA U	1.1	1.1	.7	.8	1.6	1.5	.6
249	MEMPHIS STATE U/TN	1.1	.8	.5	1.9	1.7	1.1	.7
470	AMER INTERNATL C/MA	1.1	.3	.6	3.7	2.5	.6	.3
575	ST AMBROSE COLL/IA	1.1	1.3	1.7	1.7	1.5	.4	.7
97	SAN JOSE STATE U/CA	1.1	1.6	1.0	1.3	1.7	1.0	.4
678	CHESTNUT HILL C/PA	1.1		.9	.6	1.2	2.1	1.2
529	OKLAHOMA CITY UNIV	1.1	.5	.8	1.1	1.8	1.9	.3
302	GEORGIA STATE UNIV	1.1			1.0	2.3	1.4	.6
324	PITTSBURG STATE U/KS	1.1	1.1	.2	1.0	2.7	.8	.3
842	BUENA VISTA COLL/IA	1.1			.9	4.0	.5	
214	FAIRLEIGH DICKN U/NJ	1.1		.9	1.4	1.9	1.1	.5
670	NORTH GEORGIA COLL	1.1	1.5		.8	2.2	1.6	.4
810	DILLARD UNIV/LA	1.1			.8	3.2	2.3	
233	SOWESTERN LA, U OF	1.1	.9	1.5	1.7	1.6	1.1	.3
395	CUNY-HRBERT LEHMAN C	1.1					1.3	.8
556	CLARION U OF PA	1.1				1.3		.9
241	MISSISSIPPI, UNIV OF	1.1	.5	1.0	1.4	2.4	1.1	.3
298	WESTERN KENTUCKY U	1.1	.6	.3	1.7	2.3	1.1	.4
288	INDIANA UNIV OF PA	1.1	.3	.6	.8	1.0		1.0
592	NOWESTERN OKLA ST U	1.0		.8	2.4	.4	.2	2.5
161	NORTHERN ILL UNIV	1.0	1.3	.2	.8	2.0	.7	.9
558	FLORIDA SOUTHERN C	1.0	.6	1.8	.5	1.1	1.7	.8
585	NC CENTRAL UNIV	1.0	1.4	.4	.4	1.5	1.1	.9
149	CAL ST U,LOS ANGELES	1.0	.7	.6	.6	1.8	1.3	.5
684	ANDERSON COLLEGE/IN	1.0		.9	1.2	1.7	1.7	.4
260	SETON HALL UNIV/NJ	1.0	1.4	.3	.4	1.9	1.2	.6
445	NE LOUISIANA UNIV	1.0			1.6	1.6	.9	.8
268	WESTERN ILLINOIS U	1.0	.4	.7	.6	2.8	1.4	.5
370	FLORIDA ATLANTIC U	1.0				1.0	.8	1.2
184	SOUTH CAROLINA, U OF	1.0	.7	.8	1.8	2.5	.8	.5
807	DAVIS & ELKINS C/WV	1.0		1.5	1.3	3.9	1.6	
609	WISCONSIN,U-SUPERIOR	1.0	1.1	2.3	.4	2.4	.6	.3
573	MARY WASHINGTON C/VA	1.0	.5			.6	1.7	1.3
548	HAMPTON UNIV/VA	1.0	.8	1.4	1.0	1.1	2.0	
761	LOUISIANA COLLEGE	1.0			2.2	2.7	.9	.6
787	WEST VA INST OF TECH	1.0			.8	2.6	.7	.7
503	OHIO NORTHERN UNIV	1.0		2.2	1.0	1.0	1.4	1.0
695	NORWICH UNIV/VT	1.0	.7	.8	1.1	2.3	.7	

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APPENDIX B

BA TO PHD PRODUCTIVITY RATIOS BY BA INSTITUTION AND YEAR OF BACCALAUREATE

BA TO PHD OUTPUT RANK	INSTITUTION	TOTAL PRODUCTIVITY RATIO	1950 %	1955 %	1960 %	1965 %	1970 %	1975 %
404	SUNY COLL FREDONIA	1.0			.5	1.6	1.1	1.2
786	DUBUQUE, UNIV OF/IA	1.0	.7	2.6	2.2	.7		.7
741	MORNINGSIDE COLL/IA	1.0	1.0	1.8	.6	1.0	.3	2.0
463	MORGAN STATE UNIV/MD	1.0	.4	1.2	1.5	1.2	1.0	.6
323	MURRAY STATE UNIV/KY	1.0		1.4	2.1	1.5	1.1	.2
329	SW MISSOURI ST UNIV	1.0	1.9	1.1	.6	1.6	1.0	.6
137	KENT STATE UNIV/OH	1.0	1.6	1.6	1.5	1.3	.8	.6
256	CAL ST U, FULLERTON	1.0				1.5	1.3	.7
326	MARSHALL UNIV/WV	1.0	.9	1.9	1.9	1.8	.5	.5
754	METROPOLITAN ST C/CO	1.0					2.4	.6
834	MIDLAND LTHRN C/NE	1.0			.9	3.4		1.3
778	INCARNATE WORD C/TX	1.0	.9		1.6	2.2	.9	.6
551	SAMFORD UNIV/AL	1.0	1.3	.8	1.0	1.4	.8	.6
645	WIDENER UNIV/PA	1.0			.6	1.2	1.0	2.0
583	SUSQUEHANNA UNIV/PA	1.0	1.2		3.3		.4	1.7
798	SOUTHERN COL/TN	1.0		3.1	2.7	2.1		.6
836	TALLADEGA COLLEGE/AL	1.0	1.4	3.6		1.5		
296	YOUNGSTOWN ST U/OH	.9	1.3	.8	2.0	1.1	.4	.6
808	SPELMAN COLLEGE/GA	.9			1.3	1.0	2.1	.4
659	ST MARYS COLLEGE/IN	.9	1.3		.5	.4	2.0	.8
760	CLARK COLLEGE/GA	.9		2.2	3.4	2.0		
846	ERSKINE COLLEGE/SC	.9		3.0	.8	.6	1.2	.7
618	ASBURY COLLEGE/KY	.9		.5	1.8	.5	1.4	1.4
669	NC, U OF-CHARLOTTE	.9				2.5	1.5	.6
837	DAEMEN COLLEGE/NY	.9			1.0	1.0	.7	1.4
750	WISC, U-GREEN BAY	.9					3.8	.6
451	WISCONSIN,U-L GROSSE	.9	1.0		1.1	1.8	.5	.8
363	WISCONSIN,U-OSHKOSH	.9	3.5	1.7	1.0	1.1	.8	.5
680	EMORY & HENRY C/VA	.9		2.1	.8	2.7		.5
781	MARYMNT MNHTTN C/NY	.9				2.1	1.4	.3
604	NEW ROCHELLE, COLL	.9	.6	1.5		3.3	1.0	.3
362	MONTCLAIR ST COLL/NJ	.9	.3	.8	.7	1.9	.5	.8
504	NC AG & TECH ST U	.9	.6	.7	1.9	1.0	.9	.6
638	SOUTHWESTERN COLL/KS	.9	1.4		2.0	.8	1.2	
521	PR, U-MAYAGUEZ	.9					1.8	.4
383	TEXAS A&I UNIVERSITY	.9	1.6	1.2	1.7	1.1	.5	.5
791	SAN DIEGO,UNIV OF/CA	.9			.7	.5	1.8	.5
652	SOUTH ALABAMA, U	.9					1.3	.5
535	HARTFORD, UNIV OF/CT	.9			1.0	1.2	.7	1.2
620	SOUTHERN COLO, UNIV	.9				1.5	1.0	.6

APPENDIX B

BA TO PHD PRODUCTIVITY RATIOS BY BA INSTITUTION AND YEAR OF BACCALAUREATE

BA TO PHD OUTPUT RANK	INSTITUTION	TOTAL PRODUCTIVITY RATIO	1950	1955	1960	1965	1970	1975
			%	%	%	%	%	%
387	MASS, U-BOSTON	.9					1.3	1.5
264	WESTERN WASHINGTON U	.9	.8	.6	.5	2.0	.7	.6
501	PORTLAND, UNIV OF/OR	.9	.8		1.0	2.3	.6	.9
612	DELTA STATE UNIV/MS	.9			1.4	1.4	1.2	.4
544	CENTRAL ARKANSAS, U	.9	.8	1.1	.9	1.4	.9	.8
710	CAL ST UNIV-CARSON	9					2.1	.5
139	SAN FRANCISC ST U/CA	.9	.3	.5	1.1	1.7	.9	.4
209	CAL ST U, SACRAMENTO	.9	.4	.9	1.0	1.5	1.2	.5
128	CAL ST U, LONG BEACH	.9			1.2	1.7	.9	.5
372	CAL ST U, HAYWARD	.9				1.1		.5
353	SOUTHEASTERN LA U	.9	.4	1.7	2.0	2.0	.6	.1
437	NORWESTRN ST UNIV LA	.9	.8	1.4	.6	1.3	.6	.8
570	MCNEESE STATE U/LA	.9		2.1	1.5	.3	1.4	.3
748	INDIANA CENTRAL UNIV	.8	1.5	2.5	.7	.5	.9	
802	OHIO DOMINICAN COLL	.8	2.7		1.5	1.2	.6	
514	CARSON-NEWMAN C/TN	.8		.9	1.2	1.3	.3	.8
524	EDINBORO U OF PENN	.8	.7	1.9	1.4	1.1	.6	.7
270	CAL ST U, CHICO	.8	1.1	2.5	1.5	1.7	.3	.5
550	AUSTIN PEAY ST U/TN	.8	.8		.6	2.4	.6	.2
749	OLIVET NAZARENE C/IL	.8		2.2		1.9	.3	1.0
441	NORTHERN MICHIGAN U	.8	2.0	1.4	.5	.6	.6	.7
165	WESTERN MICHIGAN U	.8	.8	.6	1.4	1.1	.9	.4
616	MUNDELEIN COLLEGE/IL	.8			1.4	1.9	.8	
830	NORTHROP UNIV/CA	.8			.2	1.7	.7	1.1
681	ARKANSAS TECH UNIV	.8			2.6	1.8	.6	.3
443	SUNY COLL PLATTSBURG	.8		.5		1.0	1.8	.6
703	LOCK HAVEN UNIV/PA	.8			1.0	.7	.6	.9
393	SE MISSOURI ST UNIV	.8	2.2	2.3	.7	.7	.5	.4
796	PRESBYTERIAN COLL/SC	.8			.9	4.4	.8	
336	EAST CAROLINA U/NC	.8		.7	.4	1.0		.2
701	NICHOLLS STATE U/LA	.8			1.3	.6	1.0	.7
392	SUNY COLL CORTLAND	.8	.3		.4	1.0	1.1	1.1
845	NC, U OF-WILMINGTON	.8				.9	.4	1.0
632	WEST LIBERTY ST C/WV	.8		1.7	2.6	3.0	.3	
449	SOUTHERN UNIV/LA	.8	.4	.3	1.4	.8		.2
301	DRAKE UNIV/IA	.8	.5	1.1	1.6	.6	1.0	.4
519	CNTRL FLORIDA, U/FL	.8					1.0	.8
325	NORTHERN IOWA, U OF	.8	.9	.8	1.1	1.5	.4	.6
493	ITHACA COLLEGE/NY	.8			.5	.3	1.5	.8
706	CATAWBA COLLEGE/NC	.8		.8	.7	2.0	.4	.4

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APPENDIX B

BA TO PHD PRODUCTIVITY RATIOS BY BA INSTITUTION AND YEAR OF BACCALAUREATE

BA TO PHD OUTPUT RANK	INSTITUTION	TOTAL PRODUCTIVITY RATIO	1950 %	1955 %	1960 %	1965 %	1970 %	1975 %
496	PRATT INSTITUTE/NY	.8	.9	.4	3.0	1.5	.4	.2
305	EMPORIA ST UNIV/KS	.8	1.2	1.7	.8	1.2	.8	.2
694	ADAMS STATE COLL/CO	.8		2.6	1.2	1.3	.5	.3
668	HOLLINS COLLEGE/VA	.8		1.4			1.9	.8
420	CENTRAL STATE U/OK	.7	.7		1.2	1.4	.8	.2
411	ARKANSAS STATE UNIV	.7		1.2	.6	1.5	.6	.3
664	GEORGETOWN COLL/KY	.7	1.3	.6	.5	.5	1.2	
294	SOUTHERN MISS, U OF	.7	.4	.6	1.3	1.4	.3	.4
737	ARKANSAS,U-MONTICELO	.7			2.0	1.5	.4	.4
687	SOUTHESTRN OKLA ST U	.7	.3	.8	1.1	1.0	1.0	.2
809	SOUTHERN ARKANSAS U	.7		1.0	.8	1.1	.6	.4
396	EAST TENN STATE UNIV	.7	.5	1.0	1.6	.8	.5	.3
651	JACKSONVILLE UNIV/FL	.7			1.9	.7	.6	.5
766	TAMPA, UNIV OF/FL	.7	.9		1.8	.7	.4	.5
476	MILLERSVILLE U OF PA	.7	.5		1.1	1.1	.9	.5
793	STEUBENVILLE,U OF/OH	.7			3.3	1.3	.5	
386	EAST TEXAS STATE U	.7	.3	.2	.2	1.7	.7	.4
653	HARDIN-SIMMONS U/TX	.7	.5		2.9	.9		
251	ILLINOIS ST U-NORMAL	.7	.8	.5	.9	1.1	.4	.6
674	VIRGINIA STATE UNIV	.7	.3	.8	2.1	.4	.5	.6
764	ST XAVIER COLLEGE/IL	.7	1.7	1.3	.6	1.1	.6	
642	BRIDGEWATER ST C/MA	.7		.7	1.0	1.1	1.0	.4
536	SHIPPENSBURG U OF PA	.7			1.0	.7	.6	.8
446	SUNY COLL GENESEO	.7			1.2	.8	.7	.7
822	RUSSELL SAGE COLL/NY	.7			2.0	1.2	.5	.5
400	WISCONSIN,U-PLATTVIL	.7	.7		.8	1.5	.8	
654	STHRN ORE ST COLL	.7		.6	.5	1.0	.9	.5
679	CONCORDIA COLLEGE/IL	.7		2.1	.4	1.3	.5	
509	WASHBURN U TOPEKA/KS	.7	.3		1.2	2.2	.4	.4
180	PUERTO RICO, UNIV OF	.7	1.3	.3	.8	.8	.8	.4
690	CHARLESTON, U OF/WV	.7	1.5	1.8	.7	.5	.2	
360	VA COMMONWEALTH UNIV	.7		.7	.4	.8	.9	.9
806	SWEET BRIAR COLL/VA	.7		3.4		.7		1.3
377	SW TEXAS STATE UNIV	.7	.4	.7	1.5	1.4	.9	.2
814	MARYGROVE COLLEGE/MI	.7	.5	.7	.6	1.0	.6	1.0
340	S F AUSTIN ST U/TX	.7	.4	.4	.8	2.0	.4	.5
753	SUL ROSS STATE U/TX	.7	.4		1.9	.4	.9	.3
841	ST TERESA, C OF/MN	.7		1.1	.6	1.1	.8	.5
840	MT ST JOS ON OHIO, C	.7			.7	1.4	.5	1.3
332	INDIANA STATE UNIV	.7	.6		1.1	.9		.3

APPENDIX B

BA TO PHD PRODUCTIVITY RATIOS BY BA INSTITUTION AND YEAR OF BACCALAUREATE

BA TO PHD OUTPUT RANK	INSTITUTION	TOTAL PRODUCTIVITY RATIO	1950 %	1955 %	1960 %	1965 %	1970 %	1975 %
432	WEST TEXAS STATE U	.7	.3	1.1	1.6	1.4	.5	.2
639	COLUMBIA UNION C/MD	.7		1.0	1.5	2.2		
646	GRAND VALLEY ST C/MI	.7					1.7	.2
762	NAZARETH C ROCHTR/NY	.7		1.0	1.2	.9	.6	.4
610	GEORGE MASON U/VA	.7					.9	.6
727	CHAPMAN COLLEGE/CA	.7				1.5	2.8	.1
435	EASTERN WASH UNIV/WA	.7	.7	1.1		2.1	.5	.3
537	BLOOMSBURG U OF PA	.7	1.1	.5	1.6	1.2	.6	.3
601	PEPPERDINE UNIV/CA	.6	.7	1.4	.6	.5	.4	.4
515	TEXAS WOMANS UNIV	.6		.8	1.5	1.2	.5	.3
574	KUTZTOWN UNIV/PA	.6		2.0	1.0	1.2	.6	.1
460	NC, U OF-GREENSBORO	.6	.2	.6	.3	1.0	.7	.5
421	SAM HOUSTON ST U/TX	.6	.4	.8	1.1	1.0	.5	.2
656	SUFFOLK UNIV/MA	.6	.6	.6	.5	1.6	.2	.6
442	SOWESTERN OKLA ST U	.6			1.3	.5	.6	.6
688	CENTRAL STATE U/OH	.6	1.5	.6	1.5	.3	.2	.3
586	GEORGIA SOUTHERN C	.6	.5		1.3	.7	.4	.8
839	IMMACULATA COLL/PA	.6		2.2		1.5	.3	
739	ASHLAND COLLEGE/OH	.6	1.6				.9	.7
477	APPALACHIAN ST U/NC	.6		.7	.2	1.5	.5	.6
789	VALDOSTA STATE C/GA	.6		1.4		1.6	.4	.4
641	BOB JONES UNIV/SC	.6	.8	1.2	.6	.3	.4	.5
321	NEBRASKA,U-OMAHA	.6	.6	.7	1.4	.7	.3	.5
768	HOWARD PAYNE UNIV	.6	1.3		1.2	.6		.4
811	LA VERNE, UNIV OF/CA	.6		1.6	.8	1.3		.4
843	VIRGINIA UNION UNIV	.6	.5		1.4	1.4		.4
355	NORTHERN COLORADO,U	.6	1.2	.2	1.1	.9	.4	.5
767	OKLAHOMA PANHND ST U	.6		1.3	1.9		.9	
702	CAL ST U STANISLAUS	.6					1.1	.4
785	MILWAUKEE SCH ENGR	.6	.8	1.5		4.4		
630	MONMOUTH COLLEGE/NJ	.6			.9	.6	.4	.7
417	SUNY COLL BROCKPORT	.6				.2	.8	.8
719	CUNY-STATEN ISLAND,C	.6					1.7	
350	MANKATO STATE U/MN	.6	.4	.7	.6	.9	.6	.3
303	CENTRAL MICHIGAN U	.6	.7	.2	.5	1.4	.4	.4
461	CENTRAL CONN ST UNIV	.6	1.3	.4	1.0	1.5	.4	.2
410	MISSOURI,U-ST LOUIS	.6					.8	.5
429	CTRL MISSOURI ST U	.6	.8	.2	1.2	.2	.8	.5
406	SUNY COLL NEW PALTZ	.6				.9	.6	.8
348	SUNY COLL OSWEGO	.6		.8	.2	.5	.5	1.0

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APPENDIX B

BA TO PHD PRODUCTIVITY RATIOS BY BA INSTITUTION AND YEAR OF BACCALAUREATE

BA TO PHD OUTPUT RANK	INSTITUTION	TOTAL PRODUCTIVITY RATIO	1950	1955	1960	1965	1970	1975
			%	%	%	%	%	%
525	MOORHEAD STATE U/MN	.6	1.0	2.9	.7	1.1	.1	.5
726	XAVIER UNIV/LA	.6	.5		2.8	.9	.5	
428	SUNY COLL ONEONTA	.6				.2	.5	1.0
547	KEARNEY ST COLL/NE	.5	1.7	.6	.7	.4	.3	.4
673	WESTMAR COLLEGE/IA	.5	1.3	1.6		.7	.4	
713	MANSFIELD UNIV/Pa	.5	.5		1.3	1.7	.2	.1
800	BOISE STATE UNIV/ID	.5					.2	.7
818	FT VALLEY ST COLL/GA	.5			.6		1.4	.3
662	CONCORD COLLEGE/WV	.5	1.1		.7	.4	.9	
457	ST. CLOUD STATE U/MN	.5	.2	1.0	.5	.9	.5	.3
717	MONTEVALLO, U OF/AL	.5			1.7	1.3	.3	.2
657	PACE UNIVERSITY/NY	.5	.2		.7	.6	.8	.7
557	NW MISSOURI STATE U	.5	.9	.9	1.4		.5	.1
828	PAN AMERICAN UNIV/TX	.5			.4	.4	.6	.5
672	WINONA STATE UNIV/MN	.5	.7		1.2	.5	.3	.5
732	WAYNE ST COLL/NE	.5	.7	.9	1.4	.3		.5
720	LENOIR-RHYNE COLL/NC	.5	.5			1.0	.4	.9
794	CHADRON ST COLL/NE	.5		1.4	1.1	.4	.5	
432	WISCONSIN,U-WHITWATR	.5			.8	1.0	.6	.3
817	SO CAROLINA STATE C	.5	.4	.4		.6	.7	.6
492	CENTRAL WASH UNIV	.5	.4	1.2		1.4	.5	.2
792	MARYWOOD COLLEGE/PA	.5			.4	.3	1.9	
474	WEST CHESTER U OF PA	.5	.6	.7	.7	.9	.3	.4
337	EASTERN MICHIGAN U	.5			1.1	.7	.1	.4
572	SLIPPERY ROCK U/PA	.5			.4	.9	.3	.6
440	EASTERN KENTUCKY U	.5	1.2	.4	.4	.7	.5	.5
566	SUNY COLL POTSDAM	.5	.6		.4	.2	1.0	.4
414	MIDDLE TENN STATE U	.5		.6	.8	.8	.5	.3
752	JACKSON STATE U/MS	.5			.6	.5	.4	.7
700	TROY STATE UNIV/AL	.5	.6		.9	.7		
735	GEO PEABODY COL/TN	.5	.9	.8		.7	.3	
820	MT ST MARYS COLL/CA	.5			.6	1.0	.6	
603	UNIV NORTH ALABAMA	.5	.7	.9	.8	.6	.5	.2
309	BALL STATE UNIV/IN	.5	.7	.6	1.0	.9	.4	.3
790	ALABAMA AG&MECH U	.5		.6	.7	1.7	.5	
689	TRI-STATE UNIV/IN	.5	.2	.3		.2	.3	.9
692	MISS UNIV WOMEN	.5				1.3	.8	
594	BEMIDJI STATE U/MN	.4	1.4		.3	1.5		.2
813	DYOUVILLE COLLEGE/NY	.4		1.7		.6	.6	
648	MOREHEAD STATE U/KY	.4		.7		.7	.6	.3

APPENDIX B

BA TO PHD PRODUCTIVITY RATIOS BY BA INSTITUTION AND YEAR OF BACCALAUREATE

BA TO PHD OUTPUT RANK	INSTITUTION	TOTAL PRODUCTIVITY RATIO	1950 %	1955 %	1960 %	1965 %	1970 %	1975 %
744	HENDERSON ST U/ARK	.4		1.1		.3		.8
546	NE MISSOURI STATE U	.4	.3	.4	1.1	.6	.2	.2
598	NOEASTERN OKLA ST U	.4	.3	.3	.6	1.1		.1
691	JACKSONVILLE ST U/AL	.4	.2	.8	.6	.8	.4	.2
665	WESTERN ST COLL COLO	.4	.2	1.7		1.0		.4
614	CUNY-BERNRD BARUCH C	.4					.3	.1
622	TENNESSEE STATE UNIV	.4	.8	.3	.4	.4	.5	.1
777	ARKANSAS, U-PINE BLU	.4	.5	.4	.7	.7	.2	
615	RIDER COLLEGE/NJ	.4				.4	.8	.4
776	WINTHROP COLLEGE/SC	.4	.7		.8	.5	.5	
826	CONCORDIA TCHRS C/NE	.4		1.4	.7	.3	.2	.3
571	TRENTON ST COLL/NJ	.4				.7	.5	.5
831	STHRN ME U/PORTLAND	.4					.5	.7
827	WEST GEORGIA COLLEGE	.4				1.0	.6	.1
780	LOMA LINDA UNIV/CA	.4	.9			.7	.2	.4
430	TOWSON STATE U/MD	.4			.7	.2	.4	.4
545	CALIF UNIV OF PENN	.4	.5		.8	.7	.4	.2
682	MARYMOUNT COLLEGE/NY	.4				.5	1.2	.4
801	GODDARD COLLEGE/VT	.4	4.5					.3
751	ALCORN STATE U/MS	.4			.6	1.1	.6	
650	JAMES MADISON U/VA	.4	.9		.5	.3	.5	.4
565	SOUTHRN CONN ST UNIV	.4		.4		.6	.8	.4
637	E STROUDSBURG U/PA	.4		.6	.9	.5	.2	.5
724	TEXAS SOUTHERN UNIV	.4	.6	.7	.5	.3	.2	.3
759	FAIRMONT STATE C/WV	.4		.7		1.2	.6	.2
788	WEST VIRGINIA ST C	.4	.3	.6		.4	.9	
745	PRAIRIE VIEW A&M/TX	.4	.6	.4	1.7	.5		
765	GEORGIA COLLEGE	.4				.4	.3	1.1
686	EAST CENTRAL UNIV/OK	.3	.3	.4		.9		.2
697	FERRIS ST COLL/MI	.3		.9	.9	1.1		
825	NORTHERN ST COLL/SD	.3		.9	.4	.6	.3	.2
772	NORTHEASTERN ILL U	.3				.3	.5	.4
728	RHODE ISLAND COLLEGE	.3		.7	.7	.5		.3
663	WEST FLORIDA, U OF	.3					.4	.2
763	FLORIDA INTERNAT'L U	.3						.3
611	FLORIDA AG & MECH U	.3		.3	.5		1.0	
636	WSTRN CAROLINA U/NC	.3		.6	1.6	.5		.1
734	ST CATHERINE,C OF/MN	.3	.6			.3		.9
755	I AMER U-SAN GERM/PR	.3					.4	
644	WM PATERSON C OF NJ	.2			.7	.2	.2	.2

00v204

APPENDIX B

BA TO PHD PRODUCTIVITY RATIOS BY BA INSTITUTION AND YEAR OF BACCALAUREATE

BA TO PHD OUTPUT RANK	INSTITUTION	TOTAL PRODUCTIVITY RATIO	1950 %	1955 %	1960 %	1965 %	1970 %	1975 %
838	GLASSBORO ST COLL/NJ	.2				.3		.4
540	SUNY COLL BUFFALO	.2	.5	.2		.4	.3	.2
812	SALEM STATE COLL/MA	.2					.2	.3
705	FROSTBURG ST COLL/MD	.2				1.0		
816	SHEPHERD COLLEGE/WV	.2		.8		.6		
747	KEAN COLL NEW JERSEY	.1					.1	.2

00v205

APPENDIX C

States By Region

000206

Appendix C

States by Region

NEW ENGLAND

- Maine
- New Hampshire
- Vermont
- Massachusetts
- Rhode Island
- Connecticut

MIDDLE ATLANTIC

- New York
- New Jersey
- Pennsylvania

EAST NORTH CENTRAL

- Ohio
- Indiana
- Illinois
- Michigan
- Wisconsin

WEST NORTH CENTRAL

- Minnesota
- Iowa
- Missouri
- North Dakota
- South Dakota
- Nebraska
- Kansas

SOUTH ATLANTIC

- Delaware
- Maryland
- District of Columbia
- Virginia
- North Carolina
- South Carolina
- Georgia
- Florida

EAST SOUTH CENTRAL

- Kentucky
- Tennessee
- Alabama
- Mississippi

WEST SOUTH CENTRAL

- Arkansas
- Louisiana
- Oklahoma
- Texas

MOUNTAIN

- Montana
- Idaho
- Wyoming
- Colorado
- New Mexico
- Arizona
- Utah
- Nevada

PACIFIC

- Washington
- Oregon
- California
- Alaska
- Hawaii

000207

APPENDIX D

Institutional Categories Derived from the 1976
Carnegie Classification System*

* Carnegie Commission on Higher Education, A Classification of Institutions of Higher Education, (rev. ed.). Berkeley: The Carnegie Foundation for the Advancement of Teaching, 1976

000208

Appendix D

Institutional Categories Derived from the 1976 Carnegie Classification System

- Research I (Type I): The 50 leading universities in terms of Federal financial support of academic science in at least two of the three academic years 1972-73, 1973-74, and 1974-75, provided they awarded at least 50 Ph.D.s in 1973-74.

- Other Doctorate-Granting (Type II): A sum of the Carnegie categories of Research II, Doctorate-Granting I, and Doctorate-Granting II institutions with established doctoral programs that awarded at least 20 Ph.D.s in 1973-74, or 10 or more Ph.D.s in at least three fields.

- Comprehensive Universities and Colleges (Type III): Institutions that offered a liberal arts program plus at least one other professional or occupational program such as engineering, business administration, and nursing. Many offered master's degrees, but all either lacked or had an extremely limited doctoral program. Former teachers colleges that broadened their curricula in the 1960s are included in this category.

- Liberal Arts Colleges (Type IV): Predominately bachelor's degree granting institutions with a strong liberal arts tradition. Thus, institutions such as Oberlin College are included even though they have master's degree programs.

- Specialized Institutions (Type V): Those with primarily focused technical or professional programs in a range of areas such as theology, medicine, engineering, business, art, music, law, and teaching.

000209

APPENDIX E

Sampling and Weighting Procedures for the 1985 Survey of Doctorate Recipients

Source: Office of Scientific and Engineering Personnel, National Research Council, "Methodological Report for the 1985 Survey of Doctorate Recipients," April 1987.

000210

Appendix E

Sampling and Weighting Procedures for the 1985 Survey of Doctorate Recipients

1985 SURVEY OF DOCTORATE RECIPIENTS

The 1985 survey was the seventh in a biennial series begun in 1973. As with its predecessors, its purpose was to collect current information necessary to characterize the supply and utilization of United States doctoral personnel in the sciences, engineering, and the humanities.

By 1985, the SDR population had undergone some significant changes. The coverage of foreign-earned doctorates located in the United States, who had not been fully covered to begin with, had dwindled as a result of biennial cohort adjustments applied since the inception of the survey. This group, classified as Segment 3, had not been updated since 1973 — attempts to do so proved costly and inadequate.

A similar case could be made for the coverage of the Segment 2 cases (i.e., doctorates in education and the professional fields who work as scientists or engineers). These individuals, who affect only the science and engineering target population were identified primarily through the National Register. Like the foreign-earned doctorates, they suffered less than complete coverage in the original 1973 survey, and that coverage had dwindled since then. While a majority of doctorates in education and professional fields who had earned degrees from U.S. institutions could have been identified through the DRF and a random sample of them could have been surveyed, an extensive address search would have been required for all but the most recent cohort. Moreover, it is likely that many, perhaps even most, of them would not have been employed in a science or engineering field. If not, they would have been excluded from the target population and, therefore, surveyed needlessly. Moreover, because the target universe within this segment was (and is) unknown it would have been difficult to determine what sampling rates would have minimized cost, yet provided sufficiently reliable survey estimates.

The Target Population

The 1985 population was adjusted to the 42-year interval and included science, engineering, and humanities doctorates who graduated between January 1, 1942, and June 30, 1984. Graduates from 1940 to 1941 were deleted from the 1983 sampling frame and replaced with the 1983 to 1984 U.S. graduates identified through the DRF (Segment 1 cases). Sources for identifying the pre-1983 graduates, who had been carried in the sample since 1973, were those listed for the 1973 survey. As noted, the target population to which extrapolations are made is the population of science, engineering, and humanities doctorates residing in the United States during the survey year. Because the core of the sample is carried from one survey to the next, individuals in the core who no longer satisfy conditions for the target population must be deleted from the sampling frame and appropriate adjustments applied correspondingly to the original population. Those deleted are doctorates known to be deceased prior to the current survey and those who indicated on the previous survey that they held a doctorate from a foreign institution and were foreign citizens living outside the United States (the latter group is referred to as "inactive").* The number of sample cases that were either inactive or deceased prior to the survey, together with the adjustments made to the sample and the population, is shown on the next page:

000211

	Sample	Population
Original Number	74,757	551,175
Inactives	- 408	- 3,391
Presurvey Deceased	- 2,142	- 15,727
ACTIVE SURVEY	72,207	532,057

Stratification Criteria and Sampling Rates

In 1985, the SDR population was stratified into 1,678 individual cells on the basis of segment, field of degree (field of employment was used when degree field was unavailable), year of degree, gender, minority status, and citizenship.** The number of strata have grown since 1979 (when the number of strata was reduced to 950) because new cohorts are more highly stratified than the older cohorts they replace. Within the individual strata, a variable rate of sampling, ranging from 2 to 100 percent, was applied to ensure adequate representation of small subpopulations while avoiding needless oversampling of large ones.

Estimation Procedure

Once all responses had been coded and edited, survey data were weighted to reflect the population values to be estimated. Two weights were applied in the estimation procedure: a sample weight and a response weight. Initially, each member of the original sample was assigned a weight inversely proportionate to the sampling rate applied to the population stratum from which the member was drawn; this is called a sample weight. For example, if a sample member, known to be deceased prior to the survey, was drawn from a population stratum that was sampled at a rate of 20 percent, that member would carry a weight of 1/.20, or a weight of 5. More generally, if s_h was the sampling rate applied to stratum h, the sample weight for each member of that stratum was equal to $1/s_h$. To determine the estimated number in the target population for a particular stratum, sample weights were applied to members of the sample who were known, prior to the survey, to be deceased or inactive; the sum of their weighted numbers was then subtracted from the original population number, yielding the number estimated to be in the target population. Similarly, the number in the survey sample was determined by subtracting, from the original sample, the total number of inactives and the number known to be deceased prior to the survey.

Response weights were calculated by dividing the number of survey sample cases in a stratum by the number of responses in that stratum (that is, applying the inverse of the response rate) and multiplying the resulting quotient by the stratum's sample weight. Let

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* The numbers of inactives and pre-survey deceased in the population are estimated from the sample. Estimation procedures are discussed in a later section of this appendix.

** More precisely, this number reflects the number of response strata; the formula used for estimating sampling error associated with individual survey results dictates that strata with fewer than two responses be merged with other strata. However, as so few cells are merged, the number reported above is functionally accurate. The overall sampling rate applied in 1985 was 13.6 percent.

000212

w_{rh} = the response weight. If n_{sh} = the number in the survey sample in stratum h, n_{rh} = the number of responses in stratum h, $1/s_h$ = the sample weight for stratum h, then

$$W_{rh} = \frac{n_{sh}}{n_{rh}} \cdot \frac{1}{s_h}$$

For example, if a stratum sampled at a rate of 20 percent was represented by 15 respondents from a survey sample of 30, the weight for each of those respondents was computed as follows:

$$W_{rh} = [(30/15)(1/.20) = 10.$$

The target population number for that stratum then was estimated at 150, i.e., the product of the response number, 15, and the response weight, 10.

To estimate the number of individuals in the target population possessing a particular characteristic, response weights were summed for all who possessed that characteristic. By definition, those learned through the 1985 survey to be deceased would be excluded from such estimates.

Since the weighting procedures described above would not necessarily yield a whole number, an adjustment was made so that only integer weights were used, thereby eliminating the need for rounding of final estimates. This adjustment resulted in two possible integer weight values for a given stratum. These integer weights were randomly assigned to the relevant observations. To illustrate, let W_{rh} = the response weight for stratum n, let n_{rh} = the number of response in stratum h, and let N_{th} = the target population number for stratum h, so that

$$N_{th} = (n_{rh})(W_{rh}).$$

Then, let x = a positive integer, where the range within which the weight will fall is provided by

$$x < W_{rh} < x + 1.$$

Finally, let y = the number of responses receiving a weight of x, and let the remaining portion of responses, formulated as $(n_{rh} - y)$, receive a weight of x + 1. Then, the integer weights would be assigned as follows:

$$[y(x)] + [(n_{rh} - y)(x + 1) = N_{th}.$$

When the response number, the target population number, and the actual response weight are know, one can compute the number of response receiving each of the integer weights.

In the previous example, the target population was 150. If instead of 15 responses, there were 12, the response weight would equal 12.5. In this case, x = 12 and x + 1 = 13. Therefore,

$$[y(12)] + [(12-y)13] \; 150 \text{ or } y = 6.$$

In this example, six of the responses will receive a weight of 12, while the remaining six will receive a weight of 13.

000213

RELIABILITY OF THE SURVEY ESTIMATES AND CONFIDENCE INTERVALS

Because the SDR estimates are based on a sample, they may vary from the values obtained had all units in the target population been surveyed using the same questionnaires and data collection methods. Two types of error are possible when population estimates are derived from measures of a sample. sampling error and nonsampling error.

Nonsampling Error

Nonsampling error may be introduced during any part of the survey operation. Inability to obtain data on all sample cases is one such type of nonsampling error. Response variability is another and may include variability in interpretation of questionnaire items, or in providing incorrect or incomplete information, whether deliberate or inadvertent. Error may also be introduced in processing responses (as in coding and editing) or in generating the final estimates. Nonsampling error that is randomly introduced will increase the variance in the data, and, hence, be reflected, in part, in the standard error estimates. Error that is biased, or constant in one direction, will contribute to bias in the estimate. This bias, however, is not reflected in the estimates of standard error.

Sampling Error

Sampling variability is the variation that occurs by chance because a sample, rather than the entire population, is surveyed. The particular sample used to estimate the 1985 U.S. doctoral population of scientists, engineers, and humanists was one of a large number of possible samples that could have been selected using the same sample design and size. Estimates based on each of these samples would have differed from one another. In theory, the deviation of each of the sample estimates from the average of all possible samples would provide the basis for estimating the sampling error associated with a particular estimate derived from an individual sample. However, the sampling error may be estimated by determining the standard error of the survey estimate. "The term standard error is ordinarily used only in referring to the standard deviation of all possible sample estimates . . . [of some] summary measure estimated from [the] samples."* In other words, if all possible samples had been selected from the target population using the given sample design and size and if a particular population estimate had been derived from each of these samples, the standard deviation of the distribution of sample estimates would be the standard error. Although all samples have not been measured, the standard error may be estimated from a single sample. The sample estimate then, together with its estimated standard error, may be used to construct confidence intervals — bounds set around the sample estimate in which, with some prescribed probability, the average estimate from all possible samples will lie.

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* M.H. Hansen, W.N. Hurwitz, and W.G. Madow, Sample Survey Methods and Theory, vol. 1, (New York: John Wiley and Sons, 1953), p. 115.

000214